The Boston Medical and Surgical Journal

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September 21, 1916

Original Articles.

THE RAT AND INFANTILE PARALYSIS: A THEORY.

BY MARK W. RICHARDSON, M.D., BOSTON.

FROM 1909 to 1914, I was Secretary of the Massachusetts State Board of Health and was, therefore, intimately concerned in the investigations made during those years in relation to the occurrence in that State of infantile paralysis. Begun in 1907, at the instigation of Dr. Robert W. Lovett, a member of the Board, and continued intensively for a period of five years under his supervision, together with the expert coöperation of Professors Milton J. Rosenau and Theobald Smith, the work of the Massachusetts health authorities represented an activity equalled only by the investigations carried on over a similar or longer period of time in Sweden. Because of their expert character, the Massachusetts investigations have received world-wide acknowledgment for the manner in which they were conducted and for the conclusions drawn from them.

At the International Congress of Hygiene, held at Washington in 1912, it was my privilege to present for the Board the results of the Massachusetts experience for the previous five years, in which presentation I maintained that epidemiological observations in Massachusetts did not bear out the general assumption that the disease was a contagious one in the ordinary sense, in that it was conveyed by direct or indirect personal contact through the secretions of the mouth and nose. Professor Rosenau, furthermore, presented experimental evidence to show that in monkeys, the infection could be transferred through the bite of the stable fly, *stomoxys calcitrans*, an observation later confirmed by Anderson and Frost. These views, however, were combated by Professor Petterson, representing the Swedish Government, who presented an elaborate brochure defending the thesis that the bodily secretions and excretions are important factors in the distribution of infantile paralysis and that direct and indirect human contact are the determining influences in the spread of the disease.

Unfortunately for the insect and fly theory of transfer, experiments made by a number of observers in the years following 1912 failed to confirm the results of Rosenau and of Anderson and Frost, so that medical opinion has gradually accepted the claims of the Swedish observers that personal contact is the essential element in the spread of the infection. This conclusion is hardly to be wondered at, in view of the fact that the virus of the disease can be demonstrated not only in the secretions and excretions of the sick individual, but also oftentimes in the nasal secretions of healthy persons who have been in association with patients. Then, too, the insect theory, especially as related to the stable fly, did not harmonize with the undoubted fact that winter epidemics, though rare, had been noted.

In spite, however, of these contradictory observations, I have never been seriously moved from my opinion that infantile paralysis is not transferred from person to person by direct or indirect contact, but that, in some manner, insects play an important rôle in the epidemiology of this disease.

The arguments in support of my position, I shall present in two categories: first, those arguments which militate against the transfer of infection by direct or indirect human contact, and, secondly, those which support the theory that the disease is transmitted by rats or other rodents, by insects on the rats or rodents, or by both in combination.

Facts Against its Transfer by Direct or Indirect Human Contact.

1. Nature of the virus: The virus of infantile paralysis resembles markedly that of rabies, essentially an animal disease. It is not in any way similar to that of tuberculosis, influenza, pneumonia, diphtheria, septic sore throat, all of which so-called sputum diseases are known to be spread through personal contact, and the infected secretions of the mouth and nose. The virus of rabies is widely disseminated through the body and is present in the saliva, and yet, the disease is not transferred from individual to individual except through the agency of a punctured wound. The mere presence, therefore, of the virus of infantile paralysis in secretions and excretions constitutes no proof that these body-products are of importance in the spread of the disease, especially when the great majority of other epidemiological factors are shown to be against such agency.

2. Summer incidence of the disease: The vast majority of cases occur during the spring, summer, and fall, when personal contact is least intimate. With the onset of winter, when the population becomes more and more congested in houses, schools, etc., the disease becomes reduced almost to nothing, whereas most of the above-mentioned sputum diseases occur chiefly in the winter time when congestion of the population is at its maximum.

3. Maximum prevalence of the disease in country districts where personal contact is least intimate at all times.

4. Failure to spread in general hospitals for children in which, up to recent times, cases have been received without let or hindrance.

5. Failure to spread in schools and institutions for children in which single cases have occurred and where personal contact with large numbers of children has been intimate.

6. Extreme rarity of the disease in doctors, nurses, and other attendants upon persons sick with infantile paralysis.

7. Entire absence of infection in laboratory workers with the virus of infantile paralysis. Of course, in these two latter instances, the effect of age is important, but occasional infection would certainly be noted if the disease were markedly contagious.

8. Comparatively rare occurrence of more than one case of the disease in large families of children even under the markedly congested conditions of tenement life.

9. Epidemics cease oftentimes in mid-career, so to speak, when the human material has been by no means exhausted and the opportunities for direct or indirect contact are at their maximum.

10. Long continued immunity of cities and towns in close commercial relations with infected centres even though interchange of population with possibilities of indirect contact is marked. The city of Springfield, for instance, although in intimate commercial relations with the infected Berkshire district in 1907 and the infected Colrain district in 1908, had practically no cases of infantile paralysis until the epidemic of 1910. A similar situation is noted by Wernstedt, who says, concerning the epidemic of 1911 in Sweden: "It is to a certain degree surprising that in the three counties nearest Stockholm and the county of Stockholm no epidemic occurrence of infantile paralysis can be traced until the epidemic had been raging in Stockholm for several months. In regard to the county of Upsala (next to Stockholm) the epidemic had already raged in Stockholm for two months before the first case of the epidemic was observed in this county, this case being, at the same time, the first observed here during that year." A similar experience was noted in Great Barrington in 1909, where a small but marked epidemic occurred first in September, October, and November, even though immediately adjacent towns of Berkshire County were afflicted during June, July, and August.

11. The Colrain epidemic in 1908 was perhaps the most severe on record, thirteen per thousand of the population being affected, yet according to Emerson, who investigated the epidemic in this and neighboring towns, evidence of contagion was practically lacking.

12. The disease has been noted by many observers to travel radially from centres of infection, and it is very common to find the later cases on the outskirts of the infected area. If third persons or indirect contact were responsible for the spread of the disease, we should expect to have an irregular distribution and to find early as well as late cases on the periphery.

13. Finally must be explained the very important fact that given areas once severely infected are commonly immune for a considerable period of years in spite of the fact that new generations are constantly being born and new susceptible material is being brought in from non-infected neighborhoods. Swedish observers, for instance, have pointed out, in comparing the two great Swedish epidemics of 1905 and 1911, the fact that although the affected districts in 1911 are contiguous to the districts affected in 1905 and have, therefore, apparently some important relation to the older epidemic, the older areas were, in 1911, practically free from the disease even though the newer areas were affected to a maximum extent. The conclusion is, therefore, necessarily to be drawn that the epidemic in 1911 had some intimate connection with that of 1905 though the relation is not clear. In

order to explain the immunity of the old areas, the Swedish investigators have put forward the theory that in 1905 the disease was very much more prevalent than was recognized, so much so in fact that, through the agency of missed and abortive cases, the community in some way not only became immune itself, but, in some unrecognized manner, communicated that immunity to the new-born generations. It is, of course, apparent that this theory is a very far-fetched one. Conceivably such a conclusion might be drawn if there had been in 1905 a severe infection of adults. Children born in the interval between 1905 and 1911 might thus perhaps inherit an immunity, but adults, as a rule, are not susceptible to the disease. This point will be taken up again in a succeeding statement and a theory much more in accordance with the facts will be submitted.

Facts Supporting the Theory that the Disease is Transferred by Rodents, Insects, or Both.

Summer incidence of the disease: That poliomyelitis occurs at its maximum in the summer months is a fact which the supporters of human transmission cannot get away from, and one which they, as a rule, glide over with insufficient comment. The resemblance, furthermore, of the disease in its epidemiology to malaria and yellow fever has been noted more than once. Moreover, the positive results of Rosenau and also of Anderson and Frost, together with the successful experiment of Flexner with the bed-bug, made it highly probable that insects might, in some instances at least, be instrumental in the transfer of the disease. In this connection, indeed, a few positive experiences by observers of the first class are sufficient to counterbalance in their evidential value many negative results. That the bed-bug might be the intermediate link in the chain seemed to me highly improbable in view of the fact that infantile paralysis attacks with almost equal frequency all strata of society. In considering, furthermore, the possible agency of the stable fly, it has always been difficult for me and others to explain the undoubted, though rare, occurrence of winter epidemics. Thus, by a sort of elimination, one is brought to a consideration of another epidemic disease, plague, which is known to be transferred, for the great part, through the agency of the rat and the flea, and to be most prevalent during the warmer seasons.

The possible relation of the rat to infantile paralysis was first brought to my attention in 1910 through an observation made by Dr. Charles E. Simpson, State Inspector of Health. In investigating an epidemic of the disease, Dr. Simpson observed the fact that many rats, whose homes had been in a town dump, were compelled, because of a fire in that dump, to seek refuge in the neighboring houses. In these houses infantile paralysis seemed to be unduly prevalent. Another experience pointing in the same direction occurred in a small country neighborhood occupied as a summer colony by a number of city residents. The only immediate unusual factor to be assigned for this epidemic was the removal, from one situation to another, of an old barn. The barn cellar was dug up and improved, and, during this operation, the affected children played in the excavation. The inference is, of course, that many old rat holes were destroyed and that the accumulation of years in the way of rat disease and fleas may have been distributed broadcast to the outside world. A third observation, but a rare one, was made in a Massachusetts city where, in an infected district, many rats were said to have been found dead. In another city a muddy river and its tributaries honeycombed to a greater or less extent the municipality. The location of the cases of infantile paralysis seemed to have a remarkable relation to this stream and its branches. Indeed, the whole Massachusetts experience seems to indicate that the disease has been endemic along its rivers, most of which are polluted by sewage to a greater or less extent. The possible association of the water rat was thus indicated.

If, now, we take the rat and its parasite, the flea, as the hypothetical agents in the transmission of infantile paralysis, how does this assumption fit the epidemiological facts?

1. The rat has a world-wide distribution.

2. It is found in habitations of all classes of the community, rich as well as poor.

3. In the winter time the rat keeps largely to its hole, coming forth in the spring with the advent of warm weather and the growth of appropriate food.

4. Although statistics are unavailable, it seems highly probable that rats are more common in the country, at least in proportion to the population, than they are in the city. In any event, it is not unreasonable to suppose that in ordinary country barns, out-houses, etc., the exposure to rat influence is much more marked than it is in the city where the houses are better built and where sewage and other sanitary provisions are much more complete. In any event, the children are constantly in the barns and numerous cats and dogs might convey infected fleas to the houses. Incidentally, the cats and dogs might become infected. This increased exposure to rat influence might, moreover, explain the higher percentage of adult infection in rural districts, noted by Frost.

5. The great increase in poliomyelitis during the last twenty-five years has been explained as due to the great increase in facility of transportation all over the world, so that infinitely increased human contact has become possible. The same argument would apply, however, to the transfer of infected rats from one locality to another. Indeed such transfer in freight cars and ships carrying grain, cattle, pigs, etc., must be common. This brings us to another consideration.

6. That the relation to the railroads of cases of infantile paralysis has been noticed by a number of observers. Nothing could be more probable than that children living near railroads should play in rat-infected freight cars. Infected rats, furthermore, if dropped from freight cars, would necessarily seek their food in the immediate neighborhood. A possible case in point was that of a young college student who contracted infantile paralysis during his summer occupation as a freight brakeman.

7. In the study of the epidemiology of infantile paralysis, it has been a common observation that (*a*) the disease occurs in foci, (*b*) in general, the cases spread more or less radially from centres of infection, and (*c*) the intensity of infection rises in one neighborhood while it is decreasing in a focus in its immediate vicinity. Such a fact is hard to explain through human transmission, which should result in the irregular distribution of cases, but is perfectly consonant with a gradually spreading infection of rodents. The migratory habits of the rat are well known. In New Orleans, Creel found that marked rats set free at a certain point in the city could be trapped considerable distances away in a very short time. Indeed, migrations of large numbers of rats over long distances are on record. The rat would, therefore, satisfactorily explain the spread of infantile paralysis from one part of a city to another, from one town to another, or from one country to another. In this connection, the following theoretical point may be of importance. In a number of instances, it has been noticed that before the beginning of an epidemic, a single case of infantile paralysis has occurred in the early months of the year, perhaps in March or April. The real epidemic, however, has not made its appearance until May or June. In other words, there seems to be a distinct period of latency or incubation, the need of which is hard to determine in view of the fact that abundant susceptible human material is close at hand. The period between generations of rats is approximately three months, and this fact may have some relative bearing; a new generation of young rats possibly being necessary to the further propagation of the disease. Or, perhaps, the virus must undergo a cycle of development in the flea. In this connection may be cited the experiments of Rosenau, who was able to convey to young rabbits the infection of infantile paralysis. The suggestion, therefore, may be pertinent that young rats, like young human beings and young rabbits, are much more susceptible to the disease than adult rats and that in a given epidemic focus, no further progress will be possible until a new generation of young rats has been born. Herein, moreover, may lie the explanation of the fact that epidemics often show two points of maximum intensity a month or two apart.

(NOTE.—Dr. Rosenau tells me that he has been able recently to produce paralytic disease in rats by inoculation with the virus of infantile paralysis. The experimental data are, however, not sufficiently advanced to justify conclusions.)

8. It has been noted above that districts severely affected by infantile paralysis are rarely affected again for a considerable period of time and that the Swedish observers have attempted to explain this fact by the assumed occurrence of a far-reaching immunization of the general human population. I have already pointed out that such a theory would be tenable only if adults were markedly subject to the disease. I believe, however, that such a local geographical immunization might well be possible through extensive infection affecting primarily not the human but the rodent population. With the immunization of the rats, the human epidemic must necessarily cease. Whether such an immunity exists and can be transferred from adult rodent to offspring must be determined by experiment.

9. In the transfer of the infection from the rat to man, the agency of the flea is assumed, although the possible contamination of food by rodent excretions might well be considered. The insect transfer might be simply mechanical or it might require a preliminary cycle of development of the virus in the flea. Furthermore, the possible rôle of cats, dogs, and other animals, or even human beings, as carriers of infected fleas, would be apparent. Moreover, in grossly unsanitary surroundings, the fleas might carry infection from one child to another directly.

The foregoing theoretical considerations have been put forward as explaining better than any other hypothesis as yet submitted, the epidemiological facts as observed in infantile paralysis.

The human contact theory cannot be made to fit these facts except by efforts so extraordinary that the value of the theory is thereby practically destroyed.

That many and extended experimental investigations will be necessary in order to determine the validity of the rodent theory goes without saying.

Our present knowledge shows the rat to be an enormous burden to mankind from the point of view of both economics and health. If it shall be shown that infantile paralysis is due in any way to the rat, no further argument will be required for world-wide efforts towards the destruction of these vermin.

SOME MEDICAL ASPECTS OF THE WORKMEN'S COMPENSATION ACT.*

BY FRANCIS D. DONOGHUE, M.D., BOSTON,

Medical Adviser of the Industrial Accident Board.

WHEN the Workmen's Compensation Act went into effect in July, 1912, the relation of the

* Abstract of remarks at the meeting of the Berkshire District Medical Society, June 29, 1916.

medical profession to the treatment of accident cases was considerably changed. The law which went into effect in regard to medical services is as follows:

"During the first two weeks after the injury, the association shall furnish reasonable medical and hospital services, and medicines when they are needed."

The theory of this law was that the insurance companies, who represented the employers of labor, would provide the best kind of treatment, because of the fact that if good treatment was not provided, the period of disability would be prolonged. It is this provision which has made a large part of the so-called dissatisfaction of the medical profession with the Industrial Accident Board, but it is only fair to point out that this is the law of the Commonwealth and is not a rule or regulation of the Industrial Accident Board. Efforts to amend this law and give the injured man the right to name his own doctor, have been made at each session of the Legislature, but without success, and in a recent decision of the Supreme Court, the right of the insurance company to provide treatment is upheld if it offers reasonable and adequate treatment, the only question upon which the Accident Board is called upon to pass. The man is bound to accept it unless he is willing to pay for his own treatment.

The Industrial Accident Board, from the beginning, have been in favor of liberal treatment of the medical profession and a liberal interpretation of the law, so that the man would not only have good treatment but, as far as possible, have the kind of treatment with which he would be best satisfied. To aid in carrying out the law and to try and obtain from the medical profession its support, a largely attended meeting was held at the State House on March 26, 1913, presided over by the Honorable James B. Carroll, the first chairman of the Board, who has since been honored by elevation to the Superior Court and then to the Supreme Bench. The result of that meeting was published by the Accident Board in pamphlet form, Bulletin No. 4, and widely circulated.

Acting upon the advice of the medical profession, the Industrial Accident Board called upon the Massachusetts Medical Society and the Massachusetts Homeopathic Medical Society, each to delegate two members who would serve as members of a committee in conjunction with three men to be appointed by the Board, to pass upon the medical problems from the standpoint of the physician. The result of the meeting of that committee, whose recommendations are contained in Bulletin No. 6, have been followed by the Industrial Accident Board. The recommendations, which are the basis of the decisions made by the Board up to the present time, read as follows:

"Fourth.—That insurance companies be requested to provide suitable blanks for notifications as well as specifications of services rendered by physicians.

Fifth.—That industrial insurance companies be encouraged to allow all reputable physicians to render services in industrial accidents, provided they are willing to render such services upon reasonable basis.

Sixth.—That the Accident Board should make arrangements with which the insurance companies should coöperate; that any physician whose bill is in dispute may appear before a representative of the Accident Board within a reasonable distance of his home.

Seventh.—That the Accident Board shall provide for medical referees by districts.

Eighth.—That fees paid by the companies should not be less than the average minimum fee in the locality in which the service is rendered.

Ninth.—That charges up to $50 for major operations are not excessive.

Tenth.—That physicians appearing at hearings before the Board shall receive the compensation as provided for under Section 8, Part III, of the act. (By a subsequent vote of the medical advisory committee this should not apply to the impartial examiners named by the Board.)

Eleventh.—That services rendered by lodge physicians be paid for, provided it is not inconsistent with the rules of the order.

Twelfth.—That specialists, established and recognized by the profession as such, may receive special rates for their work, provided the case requires special skill.

Thirteenth.—That the ruling previously made by the Accident Board, that 'fees should not be charged an injured party whose employer was insured larger than the injured party would be charged were he not insured,' should be interpreted to mean that in a given accident the fee paid by the insurance companies for services should not be less than the average minimum fee for similar services in the locality in which said services are rendered."

In spite of the fact that the law permits insuring companies to provide treatment, the larger number of companies permit a free choice of physicians as long as bills are rendered upon what the Industrial Accident Board has termed "an industrial basis." It is evident that both a free choice of physicians, and the placing of all the medical rights of the man in the hands of the insuring company, have elements of weakness which lead to dissatisfaction. The two weeks' period for medical services worked fairly well, but as there are upwards of 18,000 cases a year that go beyond the two weeks, and as cases were found in which treatment was needed weeks or months after the injury, the Industrial Accident Board petitioned to the Legislature of 1913 as follows:

"The Industrial Accident Board requests that the Legislature give the Board the power to require the payment of bills for medical and surgical treatment, medicine, medical and surgical supplies, crutches and apparatus when necessary, beyond the first two weeks after the injury, in unusual cases where the injury is so serious as to require and warrant such additional medical treatment."

Based upon this request, the Legislature passed a law which went into effect on October 1, 1914, amending the law so that the law reads as follows:

"During the first two weeks after the injury, and, if the employee is not immediately incapacitated thereby from earning full wages, then from the time of such incapacity, and in unusual cases, in the discretion of the board, for a longer period, the association shall furnish reasonable medical and hospital services, and medicines when they are needed. Where, in a case of emergency, or for other justifiable cause, a physician other than the one provided by the association is called in to treat the injured employee, the reasonable cost of his services shall be paid by the association, subject to the approval of the Industrial Accident Board. Such approval shall be granted only if the Board finds that there was such justifiable cause and that the charge for the services is reasonable."

Since October 1, 1914, the Board has the right in unusual cases to approve the payment of medical services beyond or after the first two weeks. The unusual feature of each case under the law must be considered and passed upon by the Industrial Accident Board before a doctor is able to collect for services after the first two weeks. The Board, however, has interpreted this, as in all other problems connected with the treatment of an injured man, in a liberal spirit; but for the protection of the doctor and of the patient, application should be made and the insurance company notified before the 14th day when it appears that the case is one that is going beyond the two weeks' period.

The insurance companies in hospital cases where the hospitals have met them half way, have also been liberal, and one type of case, namely, the fractures of the long bone, the fractures of the spine, in which hospital treatment beyond the first two weeks is necessary, have largely been cared for without question. The Board, in addition to taking into account the seriousness of the nature of the injury and the cost of hospital and medical services, takes into account other surroundings of the patient, such as whether or not there are dependents for whom compensation money must be used, and if used for dependents, would leave little for medical care. In other words, the amount of compensation paid and the demands made upon the compensation are both factors which should be represented to the Accident Board when applications are made for medical treatment.

Under the first law, the doctor had no individual standing in regard to the collection of his bill. He could not ask for a hearing and his rights to collect were so merged with the rights of the injured employee, that unless the injured employee asked for a hearing upon the doctor's bill, there was no way for the doctor to get a hearing. The Industrial Accident Board petitioned the Legislature that this be remedied. The Legislature passed a law which went into effect on June 25, 1914, amending the law so that the law reads as follows: (Section 13, Part III.)

"Fees of attorneys and physicians, and charges of hospitals for services under this act, shall be subject to the approval of the Industrial Accident Board. If the association and any physician or hospital, or the employee and any attorney, fail to reach an agreement as to the amount to be paid for such services, either party may notify the Board, which may thereupon call for the formation of a committee of arbitration, in accordance with the provisions of this act, and all proceedings thereunder shall be in accordance with the provisions of this act."

The Workmen's Compensation Act has, as a fundamental, the insurance of the wage-earning capacity of the worker and not the insurance of the employer against lawsuits. If the law is approached with this idea in mind, it would at once appear that the restoration of function, if accidents cannot be prevented, is of almost paramount importance. Restoration of the worker means prompt and adequate care that dangers to life may be minimized, that long disabilities be prevented, and that when healing processes are complete, there shall be treatment and training given so that the injured may use, to the best advantage, the mutilated or disabled part which results from his industrial injury.

Among other things in the interpretation of the law, the Board has interpreted, as medical services, dentistry; but dentistry, when needed, should only be provided after consultation either with the insurance company or the Board. Eye-glasses have been considered necessary for the restoration of men to work; artificial eyes have been provided and, by agreement with the companies, artificial limbs also.

The old method of determining the rights of an injured man, based upon his one day in court, under the Workmen's Compensation Act, is greatly changed. Opinion evidence, therefore, as to diagnosis and prognosis, does not have the same relation to the rights of the man that it does in ordinary court procedure.

In the first place, it is necessary to determine if the injury arises out of and in consequence of the employment. That settled, the next important thing is to give such treatment as will restore the injured employee to his former wage-

earning condition. In the hearings before the Board, there is not the effort to settle the case at one hearing, that always is made in a court of law, but he is entitled to observation under competent medical observers acting impartially for the Board, and over a sufficient period of time, so as to insure proper consideration of the injured man's rights from all standpoints.

The wage earner of the Commonwealth is one of our greatest assets and the loss of time of any trained workman is a loss not only to himself, but a loss to the community. One of the first results of the Workmen's Compensation law, aside from the applied Christianity which is involved, is the fact that the workmen receive adequate care in the form of medical services, but what may be more important, a study is made to prevent the occurrence of accidents; and prevention is undoubtedly better than compensation.

A large part of the criticism of the Industrial Accident Board from the medical profession has come, I think, from not understanding what the Accident Board can do and what the Accident Board cannot do. The Industrial Accident Board is created by a law which carefully defines its powers, and it also defines certain procedures which the Industrial Accident Board is bound to follow. Just as the Workmen's Compensation law altered materially the relation between employer and employee, so it altered the relation of the medical profession to injured employees. It also altered the relation of the lawyer and his client, if the client was an employee insured under the Act. To pass upon the rights of the employer represented by one of the many insuring companies, the employee, the hospital or the doctor who cared for the employee, the lawyer who looked after his interests, are a part of the duties of the Industrial Accident Board.

There is a considerable misunderstanding about the functions of the medical adviser of the Industrial Accident Board and he is criticized for many things about which he knows nothing and for which he is in no way responsible. If you will pardon me,—because this is rather personal,—I would like to say that under the law the medical adviser is adviser to the Industrial Accident Board on such matters as they ask his opinion. His opinion is not taken as a substitute for other testimony given at hearings, unless he appears in the case and testifies under oath. For that reason, medical testimony given by the attending physicians, or others called in cases, should be given with as much thought and care as if given in any other court, because the committee of arbitration under the law has no other evidence on which to make findings and it is only on review or appeal to the full Board that other evidence may be introduced. The medical opinion on a given case is important if properly considered, but it does not supplant testimony in regard to facts which are presented by other witnesses.

The law is not perfect; it is in process of change, but it has, as a fundamental, the proper conservation of the wage earner and offers a great field for medical study, medical investigation and constructive medical care.

To carry out the law, the Industrial Accident Board must depend upon the medical profession both for proper treatment and to see that the attention of the injured workman is properly called to his medical rights when the right depends upon some fact of which only the medical profession would have proper knowledge. It must depend upon the profession for certificates regarding the condition of men, and must rely upon their testimony in arriving at just conclusions. There is a great obligation on the profession to aid in carrying out this most humanitarian act.

THE WEASEL IN MEDICINE.

MR. PHILLIP HALE has recently called attention to the description given in Edward Topsel's "History of Four-Footed Beasts and Serpents" (London, 1658) of the medicinal uses that were made of the weasel in the spacious Elizabethan days and thereafter, as late as the Restoration. The following is the remedy recommended for gout:

"'Take a little young whelp alive, well fatted, and a living Weasel in nine pints of Oyl, and unto the same two or three pounds of butter and boyl them together until the beasts be made lank or lither, and then put your hands or feet a whole day in hot Oyl well strained.' It would be easier, continues Mr. Hale, to put weasel powder in wine; this would also be efficacious in epilepsy, the headache, and in case you were bitten by a scorpion; also for palsy or shaking of the joints; 'very effectual for the expelling or taking away of the pin and web in the eyes'; it helps all sores and impostumes. Some recommend the brains of a camel mingled with those of a weasel. If an ox or horse is stung or bitten, stroke the wounded place with a weasel skin. If you are bitten by a weasel, apply onions and garlic externally or in sweet wine.

"'Two remedies should here be given in full. The powder of a weasel being mingled with the blood of a young swallow doth heal the quinsie or squinzie. 'The same is also very effectual for the expelling of wens or bunches in the body. The same diseases are both healed by this medicine, to burn a living weasel altogether in an earthern pot, and to mingle with the powder thereof Honey, Turpentine and Butter of each a sufficient quantity, and in the manner of an

Oyntment to apply it unto the bodies of the grieved parties.'

"'There is a speedy remedy for the driving away of rheum in the head, and the Catarrh swelling by rheum in the jawes, which is this: To take a Weasel upon a Thursday in the old Moon, and put him alive in an unburned pot, that in the Boyling he may be torn, and dryed into powder, which powder being gathered together and well tempered with Honey, to give it to the diseased person every day in a spoon fasting, to the quantity of three drams, and it will in short space wonderfully ease him.'

"These remedies, Mr. Hale pertinently observes, were prescribed by the wisest ancients. They were soberly advised in 1658. What will men and women of 2158 say to the treatments and prescriptions of 1916?"

THE MAJOR DIVISIONS OF MENTAL HYGIENE—PUBLIC, SOCIAL, INDIVIDUAL.*

BY E. E. SOUTHARD, M.D., BOSTON,

Director, Psychopathic Hospital, Boston.

I TOOK occasion in preparation for this discussion to jot down a number of points which I might desire to make concerning mental hygiene. To my astonishment, I shortly found that I had written out no less than seventy-nine headings. These I shall forbear to present to you in their fulness, and hope that the chairman will call me to order when the fatigue point of the audience is reached.

It is unlikely that there should be seventy-nine main divisions in mental hygiene. The classical situation with numerous sciences and arts is that they shall divide up into three or perhaps into five divisions. As a fact, I found very many of the considerations in mental hygiene may be grouped under three headings. There is a *mental hygiene* of a *public* or governmental nature; there is a mental hygiene of a *social* nature; and there is the far more familiar and well-known mental hygiene which considers the *individual* as such. Dean Pound of the Harvard Law School has divided legal interests into public, social, and individual, and I feel that his legal distinction pretty well holds in mental hygiene.

If we run through the great group of admissions at a hospital like the Psychopathic Hospital (which this year, 1915, has admitted no less than 2000 patients), we shall find that a certain large proportion of the cases are routine cases, whose public, social, and individual features are obvious and clear, immediately suggesting an appropriate disposition and appropriate measures of treatment. These *routine* cases may not all be successfully treated from the standpoint of the individual; but from the standpoint of society and the public authorities, they can be successfully handled on the basis of familiar and well-understood rules of government, society, and medicine. But over against these routine cases, we find a minority of cases of a more difficult nature, which I may call the *intensive* group. The physicians among you will call to mind at once cases of mental complications in pregnancy, cases of brain syphilis requiring special treatment, and the like. It is true that these cases form an important subgroup among the intensive cases and require expert examinations and special devices in treatment. But aside from these intensive medical cases, we find once more that the public, social, and the individual grouping, which I have just mentioned, is further exemplified. For instance, we find a small but perturbing group of (*a*) public service cases. In this group, we have to deal with cases of family dispute with respect to will making and the like. Again we have to deal with superior court cases given to us for medical examination and decision. Again the police courts and the juvenile courts give us cases of such a special nature that they belong in the intensive group. The Industrial Accident Board and the Immigration Service, to say nothing of the schools, furnish their quota.

Besides the public service group, there is what may be called (*b*) a social service group of cases, in which legal problems are not prominent, but in which economic and domestic, and other environmental difficulties predominate. Again, we have a great number of (*c*) individual cases which are neither intensively medical nor of particular importance to the public authorities from the standpoint of community welfare, nor again of particular social importance or open to social service management for their cure or amelioration.

This brief characterization will serve to indicate some of the main divisions of mental hygiene as they develop, from a review of cases actually flowing into such an institution as the Psychopathic Hospital. You are, doubtless, all aware how different in its scope and effect the Psychopathic Hospital is from the ordinary hospitals for the committed insane. Our cases are a group that in former years would never have reached the hospitals for the insane, at least in any such quantity. So much I would say to a lay audience by way of emphasizing the fact that the task of mental hygiene is not merely that of improving the outlook of the given individual. From Feuchtersleben's work on the "hygiene of the soul," to date, it is true that mental hygiene has developed from an interest in the individual, and I for one am not disposed

* Read before the Conference of the Massachusetts Society for Mental Hygiene, Ford Hall, Boston, Nov. 17, 1915.

to regard this, in some sense, narrow view of the function of mental hygiene, as at all unfortunate. Many of the most effective workers in the mental hygiene movement have started from an entirely individual interest in the problem, seeking the way out at first by endeavors to legislate improvement into the situation, and later by the slower process of moulding public and social opinion. But to deal with mental hygiene in any of its phases means that we are carried directly from the problems of the individual to problems of society, and if life favors us with a little power, our interests pass from the less definitely social range to that more definitely crystallized portion of society's efforts known as government. In short, no one interested in the mental hygiene of the individual but finds himself forthwith launched upon one of the most stimulating of all social uplift movements, leading directly to efforts to establish in the framework of government a variety of measures for the mentally sick and defective.

The laity and the medical profession need no warning about the value of individuality in every human being. We do find, however—I speak possibly as a somewhat prejudiced physician—that the legal profession and the courts fall prey to a certain formulating tendency in which the interest of the individual gets lost or obscured. One of our problems in mental hygiene is to force the necessity of individualization of diagnosis and treatment upon the legal profession and the courts. I do not refer merely to the lack of individual handling of criminals and alleged criminals, although the situation here obviously enough calls for a revamping of the legal point of view. You will all have read or gotten some inkling of the work of Healy on the Individual Delinquent. As a medical man, I was struck with the vehemence and insistence of Healy's claim for individualization in the classification and handling of delinquents. Medical men and thoughtful laymen do not perhaps need to be brought to look upon what they regard as so obvious a matter, namely, that each human being, whether or not alleged to be a criminal, requires individualized management. If we look into the criminological world, however, we shall find that the lawyers and the judges, and perhaps even some probation officers, need to go a good way before they will arrive at what medical men would regard as a proper individualization of their material. This is doubtless why Dr. Healy, fresh from his rich experience on the border line between medicine and law, should have thought fit to devote a large work like *The Individual Delinquent* to the necessity of individualization in the handling of medical aspects of delinquents.

I said awhile since that individualized handling of mental situations by the lawyers and the judges should not be confined to criminals and alleged criminals. It is our task to demonstrate to the lawyers and the judges that the concept insanity itself is a somewhat artificial unit; that in point of fact, every insane person is really the victim of a particular form of mental disease. Kraepelin remarks that one should hesitate to classify a person as insane unless one can put him in a particular disease group. It is a question how far any but the most enlightened judges and lawyers understand the nature of the point I am endeavoring to make. The crystallized form of social service which we call court procedure or a system of jurisprudence is from its very nature liable to overformulation. The rock upon which social progress is founded is consideration for the individual. We must convince our servants in that more crystallized, not to say fossilized, regions of social service called public service, in the first place, that it is not government they are serving, but society; and that in the end, it is not even society which is so important as its individual constituents,—men and women.

The social workers of the audience will be inclined at this point to pick a quarrel with me, for they are aware that physicians are by no means always ready to take that kind of interest in the individual as such as is ingrained in the hearts of social workers. The social workers find that we physicians are more interested in *parts* of individuals than in the individuals themselves. They respect our analyses and want our diagnoses; but between the analytical physicians, on the one hand, and the overformulizing governmental representatives on the other, the social workers find a heavy task. Administrators tell me that social workers often strive to break the law gently for the purpose of helping individuals. Physicians tell me, on the other hand, that social workers may easily have too much confidence in the ability of money and vacations to solve medical problems. The social worker is, in a sense, the marrow of the present situation. I believe that a prominent practical sociologist has questioned whether social work at this time is a profession. If not, social work is at any rate a sort of cement substance or intermediary body between all the various agencies which I have mentioned, to say nothing of the hospitals and relief agencies. Social workers carry the decision of the physician to the lawyer, the decision of the lawyer to the physician, and the decisions of both to the family. They may even be found explaining these decisions to the patient himself (sometimes a doubtful expedient in the case of psychopathic persons), and they carry back news from the individual to his family, from the family to the judge, to the probation officer, to the physician, and to the public institution administrator.

The *major divisions of mental hygiene*, then, from the present aspect, may be taken as public, as social, and as individual. Development of the *public branch* of mental hygiene is in the hands of the lawyers and the institution ad-

ministrators, upon whose experience judicial decisions and statutory provisions will gradually develop the power of society over the psychopath and his family, not only in the interest of society and the family, but also in the interest of the patient himself. The non-public, or more broadly *social branch* of mental hygiene is still in an unfinished and developmental state owing to the doubt which prevails whether social service is as yet a profession. Until it becomes such, doubtless no great amount of leverage can be got for improvement of the social situation on behalf either of the psychopath or of his fellows. In point of fact, evolution in the past has tended in some countries to make public duty out of every well demonstrated social need. Social workers should not be sorry if their tasks are removed from them as soon as they begin to be successfully performed. As for the *individual branch* of mental hygiene, there has been, as is well known, a great increase of interest in the individual as an individual, derived largely from French, and later German, efforts in psychopathology. The analytical pathologist who sees his subject segregated into a lot of interesting items is being replaced with a more synthetic type of physician who sees the individual as such. Curiously enough, one of the most striking signs of this development is in a movement called psychoanalysis. The leaders of this movement are far less analytic in one sense than the routine examiners whom they wish to replace. The psychoanalysts are almost from the beginning of their labors synthetic. They put two and two together almost at the outset of their examinations and constantly see the individual as such. Whatever be the truth as to psychoanalysis, it is certain that the movement itself is but one symptom of the wave of individualization which is passing through a great many sciences and arts.

I might say much concerning the technic of mental hygiene. I might insist upon the value of getting a large and increasing number of persons to resort voluntarily to public institutions for examination; or endeavor, in the words of one critic, to make mental disease in a sense fashionable, as it has been claimed nervous prostration is fashionable. Parenthetically, it is of course true that nervous prostration is in a great many cases a mild, or even relatively severe, psychosis, and is merely termed nervous to escape the suggestions of the term "mental."

I might insist also upon the importance of stimulating the temporary care of cases not subject to court review and thus acclaim the modern tendency to take mental cases under medical care much as ordinary medical cases are taken.

I might further enlarge upon a division of the tasks of mental hygiene into a task of prophylaxis and a task of after-care; but for this time does not now permit, and all these important matters of voluntary and temporary care admissions, of the prophylactic and after-care divisions of mental hygiene, have been or will be sufficiently brought before the audiences of this conference. Other features of the general situation, such as the great value of work with alcoholics and the salvage process as applied even to apparently hopeless victims of delirium tremens, should obtain a hearing in any proper presentation of the subject of mental hygiene. The new syphilis programme dependent upon an increasing number of important medical observations and discoveries in the past few years, is also worthy of special attention. Into these things I shall not at present go, and I shall consider my task sufficiently well executed if I can go home satisfied that my contentions about individualized classification, diagnosis, treatment, and management of all cases, whether or not they belong to the medical man chiefly, to the social worker, or to the public authority, are deemed worthy.

WHAT RECENT INVESTIGATIONS HAVE SHOWN TO BE THE RELATION BETWEEN MENTAL DEFECT AND CRIME.*

BY A. WARREN STEARNS, M.D., BOSTON,

Special Investigator, Massachusetts State Board of Insanity.

ALTHOUGH the word "defect" appears in the title announced for my paper, and thus would seem to limit the scope of my remarks, I think it best to consider in my discussion not alone the relationship of mental defect to crime, but the relationship of mental disease in general to crime.

When one looks over the literature of the last few years about crime and about mental disease, it is surprising to see how well understood the relationship between crime and mental disease appears to have been for some time. It is also surprising, or at least it leads one to wonder, why so little has been done. Recent investigations have only proven apparently what we have known for a long time. The chances are—perhaps more formerly than now, but even now—that of all persons going to hospitals for the insane, anti-social or asocial conduct is a factor in a large majority. It is either anti-social conduct or fear of the possibility of such that leads most people to consider the state hospital. It is also a fact, I think, that every person who is called a criminal is now thought to have some mental variation from the normal. That variation may be slight, of course, but while it seems only too obvious, it is necessary to insist upon some attention being paid to this relation.

* Read at the Conference of the Massachusetts Society for Mental Hygiene, Ford Hall, Boston, Nov. 18, 1915.

To-night I want to sum up what has already been demonstrated under our very eyes here in Massachusetts. At the recent Conference of Charities in Pittsfield, there was some comment about the fact that the Massachusetts man takes Massachusetts as all-sufficient. I do not confine my remarks to Massachusetts in any such belief. I merely do it to show that under our very eyes enough has been done to warrant active steps being taken to correct an apparent neglect. I shall run briefly over the work of several persons, and having thus boldly asserted that there is a marked relation between mental disease and crime, I shall attempt to prove it by citing Massachusetts, and, for that reason, familiar authorities.

The first name which one strikes in considering this topic—the first work, at least—is that of Dr. Walter E. Fernald,[1] of Waverley. Dr. Fernald tells me that when he first started talking upon the relation of crime and mental disease, a newspaper editorial said that he had been looking at imbeciles for so many years that he saw them wherever he looked. At any rate, Dr. Fernald has been in a position to study the question and to demonstrate the relationship between the two social problems. He also first called attention to the fact that the criminal man described by Lombroso was none other than our imbecile boy.

The next work which has impressed me as being especially important is that of Dr. Henry R. Stedman,[2] who has been a pioneer in getting helpful legislation. Massachusetts has had some very wise laws for many years: laws by which any judge has authority to ascertain the mental condition of any prisoner; laws by which the judge has the authority to commit such a prisoner to a hospital for observation. Massachusetts was a pioneer in this direction, but unfortunately these laws have not been used as much as one would like.[3] Of seven or eight hundred patients at the Hospital for Criminal Insane at Bridgewater, only about one-seventh were sent there by operation of these laws. The other six-sevenths were sent there because these laws were *not* used and a roundabout method had to be employed.

Some years ago the Concord Reformatory recognized the need of expert advice, and employed Dr. Guy Fernald[4] as their prison physician. The conservative, concise reports which he has made from time to time of conditions there, when one considers the almost opposite reports which we have had from other sources, giving percentages of from 1 to 100%, are most welcome. It is refreshing to find a man who has consistently kept his eye to the ordinary, and given sensible results which everyone could grasp. Dr. Fernald, in his latest papers, states that 15% of the boys at Concord should be segregated because of their mental condition.

Somewhat later, under the stimulating influence of Mrs. Jessie D. Hodder at Sherborn, Dr. Edith R. Spaulding[5] began a similar work dealing with another sex, and in a way another class of dependents. She reports that 24% of the reformatory population should be segregated because of their mental condition, and that nearly half of the population show some degree of mental defect.

Next, and quite recently, Judge Bolster at the Central Court has succeeded in employing Dr. Victor V. Anderson[6] to make a beginning there. Dr. Anderson has not had an opportunity to get sweeping statistics, but in his first report, 30% of 100 sent him for examination were found to be feeble-minded, which shows that they are there, as elsewhere.

Still more recently, the Massachusetts State Board of Insanity has conducted three investigations looking toward the segregation of those now in the wrong institutions.

The first[7] of these dealt with the class called "defective delinquents." It demonstrated that in our state hospital population, there is a considerable number (mostly girls) who are not definitely insane, not definitely feeble-minded, but whose conduct it is difficult to control. Their advice was that there should be a separate department or institution for such dependents.

The next investigation dealt with the population of the Bridgewater State Farm.[8] That showed several things. In the first place it showed that obvious cases of insanity were being sentenced as criminals. It showed that the long drawn out examinations which one thinks of as mental examinations would not have been necessary in at least one-third of those cases. The ordinary judge or probation officer should have had training enough to have recognized in at least one-third of those cases that the trouble was mental disease or defect.

The last investigation of the Board of Insanity dealt with the population at the State Prison at Charlestown,[9] and as far as that has gone it also establishes the relation between mental disease and crime. Nearly one-fourth of those examined showed a considerable degree of mental defect. In each year's admissions, of 125 to 175, 15 to 20 are transferred from Charlestown to Bridgewater, as insane.

Having thus established the relationship between crime and mental disease, one might well ask what is to be done about it? There are about 176,000 arrests in Massachusetts a year. Obviously it would not be possible to do everything that can be done by way of investigating each of that number. It would take hundreds of physicians and require months of work. And it would not be practicable at present. My belief is that the first mental examinations should be made by probation officers, judges and police officers. If those who are known to be insane or feeble-minded, or who are obviously so, were weeded out of our criminal class, a step would be taken which would immediately make a change in statistics, I am sure. I hesitate to

cite cases at a meeting of this sort, and I think I had better not do it; I will simply say that numerous cases have come under observation where, following 10, 12 or 15 years of hospital residence, insane persons have been within a few days after their escape sentenced as vagrants. Known inmates of the school for the feeble-minded have been arrested, their defect ignored, and sentences imposed.

I think that there is some responsibility which is not being fulfilled by our courts in picking out these known insane and feeble-minded. I think that an examination several hours long is not feasible or necessary. I think that a good history of the life, brief and easy to get from every man arrested, obtained before sentence, would in the majority of cases enable a non-medical man to separate out most of the insane and feeble-minded. In other words, rather than a new law, there is needed a better understanding and working out of those already in existence.

I think we need to focus our attention upon these facts, which are now very well known, and instill the spirit of investigation rather than that of precedent into the courts. I believe that responsibility as well as power is at present in the courts.

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EPILEPSY.*

BY EVERETT FLOOD, M.D.,

Superintendent, Monson State Hospital.

A DEFINITION of epilepsy is difficult. The root meaning of the word conveys very little idea of the condition, but it has come to have the applied meaning which seems to be all that is necessary. If a person has a fit of any degree, mild or severe, frequent or infrequent, and this fit is repeated even a few times at intervals, we say that the person is epileptic; but it ought to be understood that epilepsy is not a disease. It is a symptom, or a collection of symptoms, of quite a variety of conditions.

It is probable that among the people of civilized countries there may be found at least three persons in every thousand who permanently have recognized attacks of epilepsy. It is also true that a very large number never come to light, and that the person afflicted goes on through life with real epilepsy but is never counted among the epileptic class. In the whole community, about one child in twelve has some sort of a fit in early life. A few have them repeated, and yet nearly all fail to become epileptic. Mothers are not worried as to the future when the baby has a fit.

The problems connected with the institutional care of epileptics are very much the same problems as those connected with the care of the feeble-minded and insane. In 500 cases of feeble-minded, 11% are epileptic. This 11% are essentially like the balance that do not have fits. They do not even rapidly go down hill mentally during a long series of years. Those epileptics who do dement come from the classes not so primarily feeble-minded.

Of the institutional cases which come to autopsy, 78% show gross brain lesions. Probably nearly all the other cases show microscopic lesions. There is no way of knowing whether there are actual lesions in the cases of those who as a rule do not come to institutional care, and this class is very much larger than the class that does come to institution care.

A person who is afflicted with epilepsy may be engaged in any occupation, but if his attacks recur many times, he is sure to lose his position; and I doubt if there is often a case where the epileptic symptom is at all prominent without some manifestation in conduct which is different from the absolutely normal.

Of institution cases, 184 epileptic children were examined with great care. Fifty-three per cent. of these were distinctly feeble-minded; 44% were on the road to dementia; 2% only were without very positive mental symptoms. Among 1033 cases, including the 184 young persons cited above, 631 are feeble-minded, 377 insane, and 25 normal. All the normal but two are among the children.

In a group of 221 cases, 30% presented active mental symptoms such as mania, delusions, and hallucinations. This agrees somewhat with the 44% who finally dement.

When we find that so many of the cases in which epilepsy occurs are among those who are defective, it is natural to assign this enfeebled mental condition as in some way a cause of their epilepsy. How this occurs in a few of the feeble-minded, and in a majority does not, I think would be impossible to say. We may as-

* Read before the Conference of the Massachusetts Society for Mental Hygiene, Ford Hall, Boston, Nov. 19, 1915.

sume that there is some inherited tendency which produces this epileptic symptom, and this seems to be as far as we can venture.

A large number of cases of epilepsy have an inheritance of either feeble-mindedness, epilepsy, migraine, alcohol, or insanity.

A certain number of cases of epilepsy are of course caused by injuries to the head, and some follow such conditions as scarlet fever and measles, but it seems almost necessary in these cases to assume a predisposing cause, as an immense number of head injuries and scarlet fever attacks are not followed by epilepsy.

If parents can know the tendency to epilepsy, or the liability of a certain condition coming about, they can care for their children, provided they have the proper intelligence and suitable surroundings, and so guard the child in the way of wholesomeness of living, diet, self-restraint, etc., as to tide them over the critical periods of childhood to maturity without their manifesting this symptom. This has apparently been done in many cases, and parents should certainly be taught how to take care of children who are especially liable. After the fit has once occurred, the matter is one of difficulty; if it occurs at intervals for quite a number of times, then it is one of extreme difficulty. However, even then it is not hopeless in all cases and very much can be done in the way of home care, which is superior to institutional care, if properly conducted. When it comes to be a question of isolation for the prevention of sex difficulties, of course, the comparison between home and institutional care is on a different footing.

IDIOSYNCRASY TO COW'S MILK; ITS RELATION TO ANAPHYLAXIS.*

By Fritz B. Talbot, M.D., Boston,

Chief of Children's Medical Department, Massachusetts General Hospital; Instructor in Pediatrics, Harvard Medical School.

The condition described as an idiosyncrasy to cow's milk may manifest itself with some or all of the following symptoms: When an infant is given cow's milk, even in small amounts, it vomits almost immediately. This may be followed by mild or severe diarrhea, high fever, or more commonly, a subnormal temperature, weak pulse, and other symptoms of shock. In a few cases convulsions, spasm of the glottis[1] or an urticarial rash has been noted. These symptoms may occur when cow's milk has been given for the first time, or after the second or third bottle, especially if breast milk has been given between the bottles. The pronounced idiosyncrasy to cow's milk, which is the subject of this communication, is relatively rare.[2]

* Read before the New England Pediatric Society, April 28, 1916.

It has been shown that the gastro-intestinal wall of the newborn infant is permeable to a foreign protein,[3] and that soon after birth an infant develops the power of destroying the foreign protein, digesting it in such a manner that when it reaches the blood stream, the foreign element is absent. This may be brought about in two ways:

1. By digesting the protein down to amino acids, and during the process of digestion, removing the foreign element from it, or

2. By developing antibodies, which will destroy the foreign element in the protein as it passes through the intestinal wall.

Certain individuals, whose parents and close relatives give a history of such anaphylactic phenomena as asthma, hay fever, chronic urticaria, or idiosynerasies to foods, have a hereditary predisposition to sensitization. Hyashi[4] attempted to determine the tolerance of twenty-eight normal infants for egg albumen, and found that infants with the "exudative diathesis," or those who had recently recovered from acute disturbances of digestion, had a lower tolerance for egg than normal infants.

After the body has developed its protective functions, injury to the intestinal mucous membrane is necessary for the foreign protein to pass unchanged through the intestinal wall directly into the blood. Such injury may accompany acute indigestion, infectious diarrhea, or any mechanical injury to the intestinal mucous membrane. Moro[5] has shown that a small proportion of babies (two out of twenty-one), with disturbances of digestion, had precipitines to cow casein, in their serum. Lust,[6] Hahn,[7] and Modigliani and Benini[8] brought forward further evidence for the permeability of the intestinal mucous membrane to foreign protein, and obtained a larger proportion of positive results than Moro. Many experiments on animals have shown that it is possible to sensitize animals to foreign proteins through the digestive canal.[9] Sensitization can be brought about by feeding either raw or boiled milk. It is more difficult to sensitize guinea pigs with milk boiled fifteen minutes, and they cannot be sensitized by milk which is inactivated by passage through a Berkfeld filter.[10]

It is necessary in certain instances so to space the doses of the foreign protein as to sensitize and not immunize the individual. Just as when a laboratory animal has its dose of foreign protein given to it at stated intervals during the process of sensitization, so must the foreign protein (in the case of the baby, cow's milk) be given to the infant. This might happen when a baby was given a bottle of cow's milk only once in ten days. In other instances the first cow's milk, and all subsequent bottles, that are given to the baby, are vomited immediately, in which case we must assume that the sensitization was hereditary, and present at birth.

If, on the other hand, cow's milk is given daily, a natural immunity ought to develop, just as it does in the laboratory animal. The work of Schloss[11] and Berger[12] gives very suggestive evidence by differential counts of the white cells in the blood, in favor of this view.

The following cases are examples of idiosyncrasy to cow''s milk:

CASE 1. D. T. A healthy baby which had always been breast-fed until he was eight and a half months old, when he was given one bottle consisting of whole milk, six ounces, and barley water, two ounces, because the mother's milk was giving out. This was not given again until three weeks later, because the baby had a middle ear. After he had recovered, whole milk, seven ounces, and barley water, one ounce, was tried and refused by the baby. It was, therefore, spooned into him, and he vomited it almost immediately. Whole milk was then omitted and whey tried, with the same result. One week later one ounce of a mixture consisting of whole milk three ounces, cane sugar three level teaspoonfuls and boiled water five ounces, was vomited. He was then given the breast and cereal gruel only, and did well for one week, at the end of which time one ounce of milk was put into eight ounces of cereal gruel, and a teaspoon of this mixture given. The baby "shuddered when he swallowed it," vomited shortly afterwards, and within an hour his body was covered with an urticarial eruption. It was then certain that he had an idiosyncrasy to cow's milk. (The shuddering is a characteristic symptom in these cases.) The milk of a goat was then obtained, and was taken without any symptoms or further trouble. Six months later, November, 1914, cow's milk was given to him without any ill effects, and he has been taking it ever since.

CASE 2. A. P. A girl of 17 months of age, with the following history: She was the first child of healthy parents, born at full term, Caesarean section, weighing five pounds at birth. Her mother was unable to nurse her, and during the first eight weeks of life she was given modifications of cow's milk, most of which were vomited. She lost weight, had undigested stools, and did not sleep as a normal baby should. At nine weeks of age she was put on a wet nurse and has had breast milk ever since. At six different times, attempts were made to wean her and she was given cow's milk in various ways, as condensed milk, whey, and in all sorts of modifications, but in every instance the milk was vomited, and the baby became very ill. She was limp, pale and cold with profound shock. These attacks were never associated with urticaria. Once when Mellin's food and milk were given, the baby "almost died." The physical examination showed a pale, poorly developed and nourished baby, weighing 15½ pounds. Aside from a general lack of development, the physical examination was normal. Scarification skin tests were done with the following materials—fresh cow's milk and dried cow casein, the protein of barley and potato,[13] all of which gave slight positive reactions. These positive reactions were narrow, elevated, urticarial wheals, surrounded by a slight reddening, while the control scarification, and that to which egg was applied, showed no reddening or elevation, and were, therefore, negative. The baby was then given goat's milk which it took without any symptoms, and was entirely weaned in two weeks' time. The mother reported one and a half months later that the baby was doing well and gaining in every way on the goat's milk.

Since the skin test to cow casein and fresh cow's milk was positive, this was a case of anaphylaxis to cow's milk. When goat's milk was given in these two cases it did not cause any symptoms. This was because the anaphylactic element in the food was not due to the milk itself, but to the cow in the protein of the milk. Mare's milk, probably, would have done equally well since it was the milk of another species. The writer does not claim any originality in the use of goat's milk in these cases, since Barbier[14] used it in 1910. He feels, nevertheless, that it has a definite indication for use, and that it should be used in all cases of idiosyncrasy to cow's milk.

CONCLUSIONS.

1. Foreign proteins may pass through the intestinal wall of infants shortly after birth, and in later infancy, when the mucous membranes are injured.

2. Idiosyncrasy to cow's milk is an anaphylactic phenomenon and can be demonstrated, at least in some instances, by a specific skin test.

3. The treatment consists in giving the infant milk from another species of animal, preferably that of the goat.[15]

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[5] Moro: Münch. med. Wchnschr., 1906, 49; Kassowitz: Zeitschr. f. Kinderh., 1912-13, v, 75.

[6] Lust: Jahrb. f. Kinderh., 1913, lxxvii, 383.

[7] Hahn: Jahrb. f. Kinderh., 1913, lxxvii, 405.

[8] Modigliani and Binini: Policlinico, 1914, xxi; No. 51: Rev. in Jour. A. M. A., 1915, lxiv, 475.

[9] Kassowitz: Zeitschr. f. Kinderh., 1912-13, v, 75, summarizes the literature.

[10] Kleinschmidt: Monatschr. f. Kinderh., 1913, xi, 644, summarizes the literature.

[11] Schloss: Paper read before the American Society for the Advancement of Clinical Investigation, May 11, 1914.

[12] Berger: Paper read before the New England Pediatric Society, Jan. 29, 1915.

[13] Prepared by Mr. Wodehouse.

[14] Barbier: Arch. f. Méd. des. Enfants, 1910, xiii, 499.

[15] Since this paper was written, an excellent article by Schloss and Worthen (Am. Jour. Dis. Children, 1916, xi, p. 342) has been published and adds much information to the subject.

Therapeutic and Preventive Medicine.

TREATMENT OF TUBERCULOSIS IN INFANCY.*

BY WILLIAM W. HOWELL, M.D., BOSTON,

Associate Physician, Infants' Hospital; Assistant in Pediatrics, Harvard Medical School, Boston.

THE diagnosis of chronic or acute tuberculosis was made in 12% of 600 consecutive medical cases under two years of age admitted to the Infants' Hospital after March, 1914. The admitting diagnoses were pyelitis, obscure fever, anemia from various causes, chronic indigestion from fat or overfeeding, bronchitis, acute indigestion with fermentation, infectious diarrhea, tuberculous meningitis; and a few were admitted for observation. Tuberculosis had not been recognized in any of the cases except the acute ones with meningitis.

I think the general impression is that tuberculosis in infancy, though a preventable disease, is hopeless, incurable, and not to be permanently helped by treatment. I think this impression and failure to recognize the disease come largely from a difference in opinion as to what constitutes tuberculosis in infancy, and before discussing the treatment it will be necessary to define clearly what is meant by the term tuberculosis in infancy.

We often hear the question debated as to what constitutes tuberculosis in infancy, but I cannot see what difference it makes whether it is infantile or adult tuberculosis. What constitutes tuberculosis is infection with the bacillus of tuberculosis, and when infection takes place, there results a pathological process whose nature has led to all the discussion as to whether an infant has a disease of tuberculosis, or is merely infected with tuberculosis. It is very dangerous to try to make such a distinction, for if the bacilli have gained entrance into an individual, they have set up a process which is permanent, which in infancy gives symptoms and is kept active enough to have living bacilli in it, and is a constant menace to health. Another dangerous expression, fortunately little used now, is "pretubercular stage," a sort of threatened-with-tuberculosis idea—as if there could be a disease with symptoms in any way connected to that disease before infection with the contagium of that disease had taken place.

I think it is now pretty generaly accepted that tuberculosis is similar to syphilis and leprosy in that it is a disease with a primary lesion. The bacilli gain entrance through the tonsil, lung, intestine, skin or wherever the portal of entry may be. There may or may not be a permanent lesion at the portal of entry, but the lymph glands draining the entrance point become inflamed and enlarged. If the portal of entry is in the lung, the primary lesion is usually demonstrable in the lung tissue as a grayish nodule in size from the head of a pin to a split pea, with the glands at the hilus of the lung on that side much enlarged. The primary focus is not always found in other localities. This constitutes the primary lesion, the primary focus and the enlarged glands; the primary focus may not be found, but the glands remain chronically inflamed with living bacilli in them. It is the primary lesion with its glands which is referred to when it is said that an infant is infected with tuberculosis, but has not the disease of tuberculosis. What is meant, however, is that the infant has none of the signs in his lungs or anywhere else which have long been taught to be the signs of tuberculosis. This condition is diagnosed at the Infants' Hospital as chronic tuberculosis to distinguish it from all other forms of tuberculosis resulting from secondary changes in the primary lesion, or from reinfection from without. These secondary changes result from extension by contiguity from the primary lesion, from breaking down of the primary glands and discharge of bacilli into the lymph or blood streams, or into the digestive tract by sputum. Secondary forms may also result from repeated reinfection from without. These secondary forms are diagnosed as acute tuberculosis, hence we have the primary glandular tuberculosis as chronic tuberculosis and the secondary forms as acute tuberculosis.

Now after this hasty summary as to what tuberculosis in infancy means, I think we may consider the treatment. If as tuberculosis in infancy, only those cases are recognized as such which give physical signs and symptoms of the secondary forms, that is, tuberculous meningitis, tuberculous bronchopneumonia, peritonitis, and so on, then there is little or nothing to be said about treatment, for there is nothing to be done except to make the baby comfortable. They all die, except a rare case of tuberculous bronchopneumonia or peritonitis. However, all secondary cases should have as near absolute quiet as possible, sufficient food but not to overtax the digestion, and fresh air but not necessarily cold air, in order to save every bit of energy, hoping that the disease may be arrested.

The first step in the treatment of infantile tuberculosis is to be willing to accept the primary lesion and all that it means, and forget the term infected with tuberculosis but not having the disease of tuberculosis. The infant with a primary lesion does not have symptoms referred directly to the location of the region involved. When local symptoms are present there is more than a primary lesion. If there is a harsh, brassy, or pertussis-like cough the bronchial glands are much enlarged, probably caseous and breaking down or there is a hilus tuberculosis due to an extension by contiguity from the primary glands. The symptoms of the primary lesion are general ones, as malnu-

* Read before the New England Pediatric Society, April 28, 1916.

trition, anemia, failure to gain, or loss in weight in spite of good feeding, indigestion; and it seems to me that these early cases have a marked intolerance for fat, so that if in a case of chronic indigestion from fat the history does not give a previous carbohydrate injury, I am suspicious of tuberculosis.

If a primary lesion can be kept as such the infant is safe, hence the treatment is to recognize the primary lesion, prevent secondary changes in it and extension from it, and to prevent reinfection from without.

The recognition of the primary lesion takes us into the realm of physical examination, but it is important enough to speak of it here under treatment. The primary lesion from its nature is represented by a localized mass of lymph glands, because the primary focus or entrance point cannot be demonstrated during life. This mass of glands is easily seen and felt in exposed places, as the neck, axilla, or groins; palpable in the abdomen as mesenteric glands; made out in the chest by auscultation and percussion, and confirmed by x-ray. The Pirquet test is reliable, if obtained, and is corroborative evidence; but one test may not be sufficient, and it may be necessary to raise the susceptibility by a subcutaneous injection of tuberculin. A mass of mesenteric or bronchial glands and a positive Pirquet without enlarged glands elsewhere, means definitely a primary lesion. Bronchial glands without a recent acute respiratory infection in an infant, not doing well, even in spite of a negative Pirquet, I should consider tuberculous till proven otherwise by the disappearance of the glands, or by repeated Pirquets and general improvement. Two cases will serve to illustrate these points:

A boy 26 months of age was brought to me because he was thin, pale, underweight and not gaining; poor appetite, distended abdomen, undigested stools, too tired to play.

Examination showed a long, thin, pale infant. Lungs clear. D'Espine at the fourth dorsal, spinal dulness corresponding, interscapular dulness. Pirquet positive. Abdomen moderately distended. Nothing abnormal made out. Stools marked excess of soap. No x-ray taken. This was a case of primary tuberculosis of the bronchial glands with the entry in the lungs.

The treatment was rest, diet low in fats with broths, green vegetables and cereals, fresh air day and night, out doors when weather permitted. The rest prescribed was twelve hours at night, as much in the day as he was willing to take and not to be encouraged to play. He gained a pound and a half the first month and showed marked general improvement. Though the mother had been told that it would take a long time to bring about permanent improvement, the boy was so much better at the end of two months that she broke rules. He stopped gaining, lost his appetite, and was peevish. With no other change but enforced rest he again improved rapidly, and when last seen after a year and a half was doing well.

A girl, 18 months, brought to me for indigestion, anemia, large abdomen.

Examination showed a thin, pale infant, nervous and precocious. Chest negative, no signs of bronchial glands. Abdomen much distended so that nothing definite was felt, tympanitic throughout. Stools large and soapy. With regulation of diet, rest, and enemas, the distention was relieved so that I could palpate a mass of large mesenteric glands. The milk supply was so questionable that with the findings I made the diagnosis of primary tuberculosis of the mesenteric glands with the entry in the intestine.

The treatment consisted mainly in rest. With moderate quiet there was no gain in the symptoms. At 20 months she was put to bed and kept flat, restraint used when necessary. At 22 months the weather permitted her to stay out night and day, and she stayed out for a year. She was unhappy even in midwinter if taken in the house for more than feeding and bathing. The gain was slow. After ten months' quiet she was allowed freedom on a large bed in the house for one hour daily but not allowed to walk. Several attempts had been made to give more freedom, each time with return of peevishness and indigestion. At the end of a year she was digesting well, gaining color, glands palpable but half the size. The temperature never went above 101° and whenever even a slight fever there was accompanying indigestion and bad stools. Now at four years is doing well and has just recovered from pertussis.

The object of treatment in these cases is to get the infants in such good physical condition that they can fight against any disturbing element absorbed from the primary glands, and to give the primary glands a chance to be walled off and become inactive, for they are never healed. There are three factors essential in the treatment—rest, fresh air and sunlight, suitable food. Rest, I think, is far ahead the most important, and I mean by rest inactivity sufficient to get gain in digestion and weight. Though this stage is called chronic glandular tuberculosis, it is a fairly active process, and active tuberculosis demands rest. If later lung or bone tuberculosis needs rest, it is just as reasonable and necessary to give it at this stage. It may seem at first thought that enforced rest might be difficult to maintain and might not be good for the infant, but if one has ever treated tuberculosis of the spine he will know of children on bed frames for months and remain in good general condition. The little girl mentioned was very happy, and it was necessary to pin her down only when she began to feel well. She did not ask to walk, and talked of the time when she would be well enough to be up and walk like other children. It is not necessary to fasten these cases to bed frames. A stout sheet, with holes for the head and arms, can be pinned to the bed, and affords sufficient restraint. The rest should be persisted in till long after the symptoms have been relieved, and then resumed gradually, according to conditions.

The infant with a primary lesion should be protected from diseases affecting the region

drained by the primary glands, because the new infection will wake up the tuberculosis, the glands will break down, and there will be discharge of bacilli into the lymph or blood stream, with the resulting secondary forms. Tuberculosis following measles or pertussis is the result of waking up a pre-existent primary bronchial gland tuberculosis by the new infection draining into the glands. Acute miliary tuberculosis may follow acute intestinal diseases by inflaming mesenteric glands which are already tuberculous. However, an infant with primary mesenteric tuberculosis may have pertussis without any unusual concern. Hence it is important to caution parents to be more than ordinarily careful not to expose infants with a primary lesion to contagious diseases or to any other infection.

The treatment of tuberculosis in infancy comes essentially to treatment of the primary lesion and the maintenance of it as such. The important factors in the treatment are suitable food, fresh air, and rest sufficient and persisted in long enough to insure good nutrition and gain in weight. As long as the tuberculosis is kept primary, the infant is safe, and unless tuberculosis is recognized earlier than the secondary forms, little or nothing can be done in treatment.

Address.

THE PORTRAITS OF FLORENCE NIGHTINGALE.

By Maude E. Seymour Abbott, B.A., M.D.

McGill University, Montreal.

(*Continued from page 367.*)

III. THE PERIOD OF THE CRIMEAN WAR. (OCTOBER, 1854, TO AUGUST, 1856, PLATE VII.)

This portrait,* one of the best known of the earlier pictures of Miss Nightingale, shows her, in garb and visage of the pre-Crimean days, seated on what is evidently a portico at Scutari, overlooking the Straits towards Constantinople. "I have not been out of the Hospital yet," she wrote, ten days after her arrival, "but the most beautiful view in all the world lies, I believe, outside my door."

As will be remembered, the Crimean War was waged between Russia and Turkey, with Great Britain and France ranged as allies on the latter side. The battlefield was the Crimean peninsula on the northeastern border of the Black Sea, and the bloodshed was so great as to almost parallel the horrors of today. The British public accepted with resignation the news of the sacrifices in the field. But it met in a different spirit the alarming reports that followed immediately upon the news of the Battle of Alma, fought on September 20, 1854, of the ravages which neglect and disease were making among the multitude of the wounded, under the complete lack of sanitation that prevailed among the British troops. Not only were the hospital supplies, that had been freely sent out, unavailable for use through misunderstandings with the Turkish customs and other stupidities, so that the men were unclothed and unfed, and all sanitary measures neglected, but there was an entire lack of proper attendance for the sick, the skilled female nurses employed by their French allies providing an invidious comparison. A letter to the *Times* from its correspondent, William Howard Russell, exposing these defects in no measured terms, and calling upon England for redress, evoked a storm of indignation that swept the country. Miss Nightingale's training and personality were well known to a large circle of influential friends, and, moreover, her excellent administration of the "Governesses Home" had brought her into touch with another side of the philanthropic public. The letter to the *Times* appeared on October 12. On October 14, under the action of a small committee, headed by Lady Maria Forester, she wrote to her friend Lord Sydney Herbert, who was then Minister at War, asking for authority to go out at her own expense at the head of a small band of five nurses. It is one of the coincidences of history that her letter to Lord Herbert crossed one from him to her, asking her, in the name of the British War Office, to undertake this task, and urging her acceptance of it on the ground that she was the only person in England who could make it a success, and promising her undivided authority over the "Female military nursing establishments in the East" and unlimited supplies. On October 21, five days after the matter was formally settled, she sailed for the East at the

* See Journal, page 414.

PLATE VII. FLORENCE NIGHTINGALE AT SCUTARI.
From an Albion print of a drawing by Wandesforde, engraved by W. Wellstood.

head of thirty-eight nurses, of whom twenty-four belonged to the Roman Catholic and Anglican sisterhoods and the remainder were untrained. During these five days of selection of candidates and all the mass of detail involved in the organization of such an expedition, as also in all the exigencies of the uncomfortable voyage out, the most noteworthy thing about Miss Nightingale was her absolute calm, and her quiet control of the situation.

The groups of military hospitals in the East bore to each other something of the relationship that the field and base hospitals of our forces do now. On the Crimean peninsula, in the immediate neighborhood of the conflict and amongst the adjacent hills, there were, in addition to the regimental dressing-stations, four large general hospitals, some established in huts, others in buildings. On the opposite, that is, the southwestern, side of the Black Sea, across the Bosphorus from Constantinople and overlooking the Sea of Marmora, were the three great British military hospitals of Scutari, two of which, the General and Barrack Hospitals, were under the jurisdiction of Miss Nightingale, as also were all the hospitals in the Crimea, and for a time those at Koulali, four miles distant from Scutari. It was to the great Barrack Hospital of Scutari that she came on arrival, and there she had her headquarters. The abuses complained of in the *Times* were especially evident here because of the great overcrowding, the more unhealthy situation, the prevalence of cholera and other infections, and the fact that the means of transport across the Black Sea was very poor, so that the wounded arrived at Scutari in the last stages of exhaustion, in a condition when the lack of suitable food and the general inefficiency worked greater havoc.

The party arrived at Scutari on November 4, 1854. The Battle of Balaklava had been fought on October 25, and that of Inkerman on the day before their arrival, and the wounded were pouring in. The hospital was a huge place, capable of accommodating over 2000 patients (the maximum at one time was 2434, on December 23, 1855), and containing, in its overcrowded state, over four miles of beds, eighteen inches apart. In a letter written on November 14, Miss Nightingale writes that there were 1715 sick and wounded (among whom were 120 cholera patients), in this hospital, and 650 in the other building, called the General Hospital, of which they also had charge, "when a message came to prepare for 510 wounded arriving in half an hour from the dreadful affair at Balaklava. Between one and nine o'clock we had the mattresses stuffed, sewn up, laid upon the floor, the men washed and put to bed, and their wounds dressed." It was with such numbers and with similar emergencies, under circumstances of extreme complexity, that Miss Nightingale had to cope, during that first six months.

The fact that there was gross maladministration in every department of these hospitals at the time of her arrival, has been clearly established by the Royal Commission appointed at the time. The trouble was partly due to an organization without central authority, partly to gross ignorance of ordinary hygiene, partly to the want of the woman's touch, and in part doubtless to the real lack of capacity of certain officials to deal with a novel situation. Miss Nightingale brought all her powers of tact, courage, judgment and resolution to meet the exigencies of the case. The large public funds that had been placed at her disposal by the *Times* and other sources, as well as her own private income, enabled her to tide over a situation otherwise hopeless; but the problem remained to meet these urgent necessities within the limitations set by military rigidity and professional jealousy, for she realized from the outset that strict discipline must be observed by herself, and a proper subordination to the medical officers in charge. Much has been said of her "irregular" methods of cutting the Gordian knots of her dilemmas by supplies from her own reserves or by deliberate and unauthorized invasion of the purveyor's stores. But she never neglected to support such action by a medical requisition, and investigation shows that she never set authority causelessly aside. Rather she had the insight of that perfect discipline, which recognizes the point at which the breaking of the *letter* is the fulfilment of the *spirit* of the law!

Many of the difficulties are detailed in her letters to Lord Herbert, with suggestions for their redress. Thus, on her arrival there was no provision for the cleaning of the hospital, "not a basin, or towel, or piece of soap, or a broom," and her first requisition was for 300 scrubbing brushes! The patients' linen was not washed, and the bedding was only rinsed through in cold water, for the contract made by the purveyor with this object broke down before the convoys from Inkerman came in. Her first step was the renting and equipping of a Turkish house as a laundry, and the placing of the soldiers' wives at the washtubs. There was no clothing in the purveyor's stores, while, by a curious command, the soldiers had been required to leave their knapsacks before the Alma, in order to "march light" towards Sebastopol. In consequence the wounded arrived half naked and destitute of kit wherewith to leave the hospital. "I am clothing the British Army," she wrote. Again, on her arrival she found the entire cooking done in thirteen huge boilers, with no provision whatever for extra diets or special delicacies between times, and, by an extremity of red-tapeism, the rations

were served *raw* in small quantities for each patient. "This practice," writes Miss Nightingale to Lord Herbert, "seems invented on purpose to waste the time of as many orderlies as possible, and it makes the patients' meals late, because it is impossible to get the diets thus drawn, cooked before three or four o'clock. The scene of confusion, delay, and disappointment, where all these raw diets are being weighed out by twos, and threes, and fours, is impossible to conceive, unless one has seen it, as I have, day by day. Why should not the Commissariat send at once the amount of meat, etc., required, to the kitchens,without passing through this intermediate stage of drawing by orderlies?" One of the most important measures introduced by her at the Barrack Hospital, was the opening, within 10 days of her arrival, of two extra diet-kitchens, and the placing of three supplementary boilers for arrowroot on various staircases. A few months later the great Soyer joined her as a volunteer, and took over the management of this invaluable part of the work.

And so with a thousand other details of management and equipment. She organized relief measures for the women camp followers, provided reading rooms for convalescent soldiers, engaged and superintended 200 builders in the emergency repair of a large part of the hospital, trained orderlies in sanitary measures, and herself did the work many times of a sanitary engineer, everywhere applying the expert's touch. But all this would have been ineffectual had she not had behind her own action the intelligent and informed power of those in authority at home. Her long days were followed by nights of letter-writing, when she indicated clearly to high sources what the necessary reforms were, and just how they should be carried out. Not only had she the loyal support of Lord Herbert and his colleagues, but the Queen herself was behind the prompt execution of her suggestions, and this was one of the most important sources of what was called by her enemies "The Nightingale Power." Among other measures enacted at her suggestion, it was due to the Executive Sanitary Commission, appointed in the winter of 1855, to act with plenary powers on the spot, that the horrible sanitary conditions of the hospital, which may be said to have overlain a great cesspool, were removed. The death rate fell as the result of the action of this Commission, with remarkable rapidity.

But there was still another side of her activity—and that the ceaseless keynote of the whole, to which all her functions of administrator and reformer were, in á sense, secondary. "A Ministering Angel Thou!" Her devoted care of the patient, personal sympathy for the sufferer, skillful tending of the exhausted, and faithfulness to the dying,—all those qualities that went to make the Lady-in-Chief at once the Queen of Nurses and the adored of the wounded soldiery, shone day and night through those crowded wards at Scutari like the beam of her own lamp!

In the spring of 1855 Miss Nightingale crossed the Black Sea to the Hospitals of the Crimea and remained there for some time. The physical strain upon her here was great, for the several hospital buildings were distant from each other, and she was obliged to go from one to another, often in the depth of night, over rough country. With her strength undermined by the strain of the work at Scutari, she fell ill of Crimean fever, and nearly died. It was when the news of her recovery reached an anxious England, that the popular feeling for her, which had been growing stronger ever since the day it was discovered that the "Mrs. Nightingale" of the Nursing Expedition was a young and beautiful woman, and which was being constantly enhanced through countless grateful letters home from wounded and dying soldiers, burst all bounds, and a wave of tenderest enthusiasm swept England from shore to shore. A public meeting was called in London "to give expression to the general feeling that the services of Miss Nightingale in the East demand the grateful recognition of the British people." The room was crowded to suffocation with the flower of England's men and women, her own parents among them. The speeches were beautiful, and were touching to a degree in their perfect recognition of the single-minded spirit in which her wonderful work was done. Dearest of all to her heart—perhaps the only part of it all for which she really cared at all—was the joy that this public recognition of her work brought to her parents and to her sister, Lady Verney, long since reconciled to her purpose, and now understanding her at last.

It was at this meeting that the Nightingale Fund was inaugurated, "to enable her to establish and control an Institution for the training, sustenance, and protection of nurses, paid and unpaid." This fund was later applied by her to establish a training school for nurses at St. Thomas's Hospital. The flood of popular enthusiasm rolled on through the British Dominions, and public meetings in support of her fund were everywhere held. And the Queen honored her with a beautiful jewel, especially designed for her by the Prince Consort.

After recovery from her illness, Miss Nightingale was urged to return to England, but she insisted on remaining at her post, part of the time at Scutari and part at the Crimea, until after the termination of the war. It was on August 4, 1856, four months after the Treaty of Peace was signed, that she reached again her native land.

Public excitement was intense at the thought of her expected return, but, as Lord Ellesmere had said, speaking on May 5 in the House of Commons, "she is probably planning now how

to escape as best she may, on her return, the demonstration of a nation's appreciation of the deeds and motives of Florence Nightingale." She arrived at Lea Hurst from Paris unrecognized, under the name of Miss Smith, and walked unaccompanied from the little station to the protection of her home.

Disappointed of a public demonstration, the Press overflowed with admiring tributes in poetry and prose. With his usual timeliness, Mr. Punch published several excellent poems. One of these, which appeared on August 23, 1856, mirrors so well the sympathetic understanding and the real affection that swayed the British public of her day, that it is in the truest sense historic, and for that reason may be quoted here.

THE NIGHTINGALE'S RETURN.

"Most blessed things come silently, and silently depart.
Noiseless steals springtime to the year, and comfort to the heart.
And still and light, and gentle, like a dew, the rain must be
To quicken seed in furrow and blossom upon tree.

"Nile has his foaming rapids, freshets from mountain snows,
Yet, where his stream breeds fruitfulness, serene and calm he flows,
And, where he overbrims, to cheer his banks on either side,
You scarce can mark, so gradual, the swelling of his tide.

"The wings of angels make no stir as they ply their work of love,
Yet by the balm they shed around, we know them that they move.
God spake not in the thunder, nor the mighty rushing blast,
His utterance was in the still small voice that came at last.

"So she, our sweet Saint Florence, modest, and still, and calm,
With no parade of martyr's cross, no pomp of martyr's crown,
To the place of plague and famine, foulness and wounds and pain,
Went out upon her gracious toil, and now returns again.

"No shouting crowds about her path, no multitude's hot breath,
To fan, with winds of vanity, the doubtful fires of faith.
Her path by hands official all unsmoothed, her aims decried,
By the Levites, who, when need was, passed on the other side.

"When titles, pensions, orders by random hand are showered,
'Tis meet that, save with blessing, she still should walk undowered.
What title like her own sweet name with the music all its own?
What order like the halo by her good deeds round her thrown?

"Like her own bird, all voiceless when the daylight songsters thrill,
Sweet singer in the darkness, when all songs else are still,
She, in that night of darkness that turned other hearts to stone,
Came, with soft step and gentle voice, yet wise and firm of tone.

"Think of the prayers for her, that to praying hearts came back
In rain of blessings, seeming still to spring upon her track.
The comforts of her graciousness to those whose road to death
Was dark and doubtful till she showed the light of love and faith.

"Then leave her to the quiet she has chosen. She demands
No greeting from our brazen throat, and vulgar clapping hands.
Leave her to the still comfort the saints know that have striven.
What are our earthly honours? Her honours are in Heaven."

Punch, Aug. 23, 1856.

IV. THE PERIOD IMMEDIATELY FOLLOWING THE CRIMEAN WAR. (1856-1861. PLATES VIII, IX, X, XI.)

The dissimilarity between the early and the late portraits of Miss Nightingale has often been remarked. This is not entirely due to the fact that the earlier ones are mostly light crayon drawings, the later, photographs "taken by commandment of the Queen" on her return from the East; nor is it to be explained by the natural changes occurring in the transition from young maidenhood to early middle age. There is in the best of these later portraits to be clearly traced the birth of a great experience. She has seen and partaken of the travail of the world's tragedy, and it has left its indelible mark upon her face. The qualities, too, that she has gained in the great conflict are visible. This is especially true of the charming little head shown in Plate IX. Endurance, unflinching decision, tempered with the kindly tolerance born of a great sympathy, even a humorous appreciation of the frailties of officialdom, are all expressed in the fine curves of the mouth, while in the eyes is the deep contentment of one who has seen the Vision, and knows of the foundations of her faith.

During the five years following the Crimean War, and especially during the immediately succeeding time, Florence Nightingale needed every spark of spiritual force which had come to her from the fires through which she had passed. She and her friend Sydney Herbert, with other loyal coadjutors, were together to shoulder a burden of reform, under which immediate action was so imperative, that only by unrelaxing effort could results be achieved. The strain was of a different kind from that in the Crimean hospitals, but the task to be accomplished was even more gigantic. On the other

PLATE VIII. MISS NIGHTINGALE (ABOUT 1856).
(Taken by order of the Queen shortly after her return from the Crimea.)
From a picture in the possession of the Canadian Nurses' Association, Montreal.

hand, the unremitting energy demanded of her told upon her weakened frame, and she became permanently invalided, and saw all her dreams of an active life among the hospital training schools she was about to inaugurate, permanently denied her. Moreover, during these years she was to see Lord Herbert himself sink under the work. He died in 1861, before he had accomplished what she called the "mainspring" of the whole,—the reform of the internal organization of the British War Office. His death was a blow from which she never quite recovered. During these five years they were in constant communication and consultation, and were allies in the truest sense, giving to each other a comradeship and a loyal support and understanding that was essential to the great results that they attained. Their work was in a sense complementary, for she had the administrative, he the political and executive mind (Sir Edward Cook). Their relationship is to be recognized as one of the great friendships of all time, and in a sense it is unique in history. Sydney Herbert was a man of immense charm, with a devoted wife who shared his every thought, and between whom and Miss Nightingale there existed a close intimacy and a strong spiritual tie. Not the least part of the great inheritance that Florence Nightingale has left to her sex, is the fact that such true friendship between man and woman can and does exist.

Only the first few days of Miss Nightingale's return to England were given up to personal matters. The consciousness pressed home that her experience in the Crimea must not be allowed to sink, even temporarily, into oblivion, but that the iron of public opinion must be struck while still hot, if the evils under which the soldiers had suffered were not to be repeated and perpetuated. The remarkable change wrought in the mortality of the hospital at Scutari by Miss Nightingale and her supporters during the first six months of the war was to be looked upon as a sanitary experiment of the most brilliantly successful kind. It was of vital importance to the future welfare of the army that the evils fought against and corrected in the Crimea, should be exposed in a Royal Commission of enquiry, and that action should be taken against their repetition while indignation still burned hot in public sentiment. Miss Nightingale was keenly alive to the horror that had surrounded her in the Crimea, and never forgot that mortality rate of 60% in the Scutari Hospital during the first weeks of her stay there, that blackened the good fame of the British Army regulations. Among her private notes of 1856 is written, "I stand at the altar of the murdered men, and while I live I fight their cause."

PLATE IX. MISS NIGHTINGALE ON HER RETURN FROM THE CRIMEA.
From a photograph in the collection of the late Mr. J. B. Learmont, Montreal, reproduced also by the London Stereoscopic Company.

The required reforms were already the subject of serious discussion between herself and Lord Herbert. It was at this juncture on August 23, 1856, a fortnight after her return, that she was given the opportunity by an invitation to Balmoral Castle, of personally setting forth to Her Majesty the sufferings of the Queen's Army in the East, and their possible means of redress. Her preparation for the interview was thorough. In consultation with those who had the cause of medical reforms at heart, by the study of statistics, by enquiries, and by the collection of her own notes and memoranda, she armed herself to make the utmost use of her great opportunity. Nor was she disappointed. The Queen and the Prince Consort together gave her their fullest attention. "She put before us," wrote the Prince in his diary, "all the defects of our present hospital system, and the reforms that are necessary. We are much pleased with her; she is extremely modest." Nothing could be done, however, without the action of Ministers, and although she returned to London apparently successful, many months of delay and strenuous insistence were to elapse before a Royal Commission, with Lord Herbert as chairman, could be appointed. This took place by Royal Warrant on April 26, 1857, shortly after the publication and circulation of Miss Nightingale's comprehensive private report, entitled, "Notes Affecting the Health, Efficiency, and Hospital Administration of the British Army." This book created a profound impression. Sir John McNeill writes repeatedly in appreciation of its clearness and vigor, and ends, "I think it contains a body of information and instruction such as no one else, so far as I know, has ever brought to bear upon a similar subject. I regard it as a gift to the Army, and to the country altogether priceless."

The Commission appointed, its duty was to submit a report of the abuses and projected reforms, to the House of Commons. Miss Nightingale's own evidence took the form of thirty-three pages of written answers to questions in the "Blue Book" report. "It was distinguished," in the words of an Army doctor of the time, "by a clearness, a logical coherence, a pungency and abruptness, a ring as of true metal, that is altogether admirable."

The Report itself was written by Mr. Herbert, with much assistance from Miss Nightingale. It recommended the appointment of four sub-commissions, whose functions should be: to put the barracks in sanitary order; to organize a statistical department; to institute a medical school; to reconstruct the Army Medical Department, and to revise its hospital regulations. To it was appended a statistical study made by Miss Nightingale, of the civil and military mortality statistics in certain London parishes, from which the startling fact revealed itself that the rate of mortality among the soldiers living in barracks was five times as great as that of civilians living at home. To force this existing fact, namely, that the Army in time of peace was being exposed to the effects of bad sanitation with disastrous results, upon the attention of the House, meant a hearing, which perhaps the evils of the Crimean War, already becoming a thing of the past, might possibly not obtain, even so soon after the terrible events. After much activity on the part of all interested, the Report was formally acted upon, and the four sub-commissions authorized. They immediately set to work, with Miss Nightingale the heart of each, herself now ill and weak from the prolonged exertion of these strenuous months, after the strain in the Crimea. It was quite possibly the effects of these months of unremitting exertion, at a time when her body demanded rest, that left her a permanent invalid. A diagnosis of Miss Nightingale's malady has not, so far as we know, been framed, but her own statement about herself in her letters to her medical friends, suggest that she suffered from some form of cardiac insufficiency associated with cardiac dilatation and a paroxysmal tachycardia. Even at her lowest ebb, she never put aside her harness, but met emergencies as they arose, until in February, 1858, the various investigations made and the resulting recommendations were embodied in a second Report from the Commission.

PLATE X. MISS NIGHTINGALE ON HER RETURN FROM THE CRIMEA.
From a photograph in the possession of Dr. Collins Warren, Boston.

The results were worthy of the heavy price she paid in the permanent sacrifice of her health. Each commission carried its work through to a successful issue, with beneficial results that are felt in our own day in a hundred directions. The Crimean episode will always take a leading place in the story of Florence Nightingale's life. But, as has been said, its greatest importance lay in the insight, experience, and political influence which she gained

in it, and which made it possible for her to inspire these far-reaching reforms.

PLATE XI. MISS NIGHTINGALE (IN 1858)

From a photograph by Goodman in the possession of Dr. Collins Warren, Boston.

The results of the work of the four sub-commissions may be briefly summarized as: the better barrack accommodation and military hospital construction, which have resulted in the improved health of the British soldier at home today; the revision of army medical statistics and the establishment of British army statistics on a higher plane than that of any other country in the world at that time, a task in which the statistical skill, energy, and persistence of Miss Nightingale was united with the experience of the celebrated Dr. William Farr; the foundation of the Army Medical School, and the splendidly equipped Royal Medical College; and the formulation of a code for regulating the relative duties of regimental medical officers, and organizing the detail of the internal administration of military and other hospitals.

The third sub-commission, to establish an Army Medical School, had the longest and weariest struggle against the obstruction of subordinates of them all, but it accomplished most important results. The Army Medical School, afterwards removed to Netley, was peculiarly Miss Nightingale's child, and she watched over its early progress with earnest solicitude. In every part of the administration the professors sought her assistance, and she made a successful fight, against much opposition, to have pathology recognized in the professoriate. Her services as the true founder of the School were acknowledged at the time. Dr. Longmore, the professor of military surgery, told the students that it was she "whose opinion, derived from large experience and remarkable sagacity in observation, exerted an especial influence in originating and establishing this school." "For originating this school," wrote Sir James Clark, "we have to thank Miss Nightingale, who, had her long and persevering efforts effected no other improvement in the army, would have conferred by this alone an inestimable boon upon the British soldier."

Apart from the work of the commissions, many other army reforms were instituted by Mr. Herbert and inspired by Miss Nightingale. Such were the committee to reorganize the Army Hospital Corps and the Soldiers' Recreation Clubs. The latter were organized by them with much success, not only in England, but at Gibraltar, Chatham and Montreal, which was then a military post. The regimental institute attached to every modern barrack is the direct outcome of this branch of their pioneer work.

Such is a brief outline of the epoch-making work carried on by Sydney Herbert and Florence Nightingale during these five years immediately following her return from the East. Great as it was, however, these reforms in army sanitation were not by any means the only side of her activities during this period. Of equal importance was: (1) her work in the reform of modern hospital construction as a whole, (2) in the introduction of statistical forms for hospital use, and (3) especially in the foundation of modern nursing.

Miss Nightingale's prestige in matters of *hospital construction* was recognized before her book, "Notes on Hospitals," appeared, in 1858. This book was written in connection with her work on the first sub-commission, and is a technical study of the subject supplemented with numerous maps and diagrams, and recommending the elementary principles of sanitation, which were not then generally recognized, and the pavilion system. "It appears to me," wrote Sir James Paget, "to be the most valuable contribution in application to medical institutions I have ever read." After its appearance she was widely consulted on hospital construction at home and abroad, and revised the plans of many hospitals erected in Great Britain, Germany, Belgium, Spain, France, India and America.

Her work as a *statistician* has already been referred to and her alliance with Dr. William Farr. Her statistical forms for the use of hospitals were presented at the International Congress in London in 1860, and were introduced in the leading London hospitals. On June 21, 1861, a meeting was held at Guy's Hospital and it was unanimously agreed—by delegates from Guy's, St. Bartholomew's, St. Thomas's, the London, St. George's, King's College, the Middlesex, and St. Mary's—"that the metropolitan hospitals should adopt one uniform system of registration of patients; that each hospital should publish its statistics annually, and that Miss Nightingale's Model Forms should, as far as possible, be adopted."

Her work in the *foundation of modern nurs-*

ing has been described as one of the three great contributions of the nineteenth century to the relief of human suffering in disease. In the alleviation which it has supplied it takes rank with the discovery of anesthesia by Sir James Simpson, and asepsis by Sir Joseph Lister.

The Nightingale Training School for Nurses was opened at St. Thomas's Hospital on June 24, 1860, under the administration of the Nightingale Fund, which amounted to £44,000, raised throughout the British Empire, as a tribute to the Crimean heroine in 1855. Miss Nightingale planned every detail in its organization, and assisted the first matron, Mrs. Wardroper, in the discharge of her activities. She herself interviewed and accepted candidates and others, and afterwards preserved the closest touch with the pupil nurses and graduates. The influence of the school spread rapidly, and the Nightingale nurses, both in Great Britain, the Colonies, and the United States, made their way as superintendents. The Blockley Hospital in Philadelphia, and the Montreal General Hospital here, were two of those that owned a Nightingale superintendent. In Germany, Sweden, France, and Austria, too, the lead was followed, and nurses were trained along the same lines. Thus the seed that was carried by Pastor Fliedner from Elizabeth Fry in London to Kaiserwerth in Germany, was transplanted by Florence Nightingale again on English soil, and grew into a mighty tree.

It has been well said that Miss Nightingale did not originate the idea of trained nursing of the sick, for there were sisterhoods and great nurses before her time. What she did do was to place the art of nursing on the plane of a profession, and to transfer it, as the books of the British census show, from the category "Domestic," in which it stood before her time, to that of "Medicine." Both by precept and example she taught and tried to instill into her nurses the principles and the code of honor that raise an occupation into a profession. She raised a great enthusiasm among the women of her time, many of whom grasped her meaning, and worked with her to attain this end. She took it out, too, of the place in which it had been put before her time by the religious orders, who regarded their nursing chiefly as a means of self-abnegation and humiliation. She believed, no one more strongly, that the true nurse must have a sense of vocation, and that without it she should not enter the profession, and with her "nursing was a sacred calling, only to be followed to good purpose, by those who pursued it as the service of God, through the highest kind of service to man." But she recognized also, that the skilled services of the trained nurse should form an honorable means of livelihood, and insisted on the public recognition of this fact. Miss Nightingale never thought or cared about what has been called women's rights, but she was essentially a pioneer in the interests of her sex. By the high estimate and value she placed upon the skilled services of women in a capacity in which only they can serve, she raised the public sense of the value of those services all along the line, and there is probably no other woman to whom modern women owe so much. Her words on the subject of the modern feminist movement, which was just beginning in her day, and which close her little volume "Notes on Nursing," are an epitome of wisdom, and strike directly home.

"I would earnestly ask my sisters to keep clear of both the jargons now current everywhere (for they are equally jargons); of the jargon, namely, about the 'rights' of women, which urges women to do all that men do, merely because men do it, and without regard to whether this is the best that women can do; and of the jargon which urges women to do nothing that men do, merely because they are women. Surely woman should bring the best she has, whatever that is, to the work of God's world, without attending to either of these cries. It does not make a good thing, that it is remarkable that a woman should have been able to do it. Neither does it make a thing bad, which would have been good had a man done it, that it has been done by a woman.

"Oh, leave these jargons and go your way straight to God's work, in simplicity and singleness of heart."

The "Notes on Nursing" was published in 1860. It is the best known of her writings, and in the purity of its English, the vigor and simplicity of its style, and the fundamental soundness of its teaching, is in the highest sense a classic. It is a book which anyone may read with delight and information today, and should be republished in popular form. Florence Nightingale posesssed the literary faculty in a very high degree, and was a voluminous writer, but she held this, as she did her social accomplishments, very lightly, to be used only as a means to an end, and to be considered, rather as a "temptation" to be avoided, that might lead her away from the purpose to which she had consecrated herself, and never as an end in itself. This is the reason, that although her contributions to the literature of her time are as important and probably as numerous as those of her illustrious contemporaries, Mrs. Gaskell, George Eliot, and Harriet Martineau, they are not recognized as such, for they are largely on technical subjects and many of them are hidden in the Blue Books of the day. It is only when she is dealing, almost as it were by accident, with subjects of wider intellectual scope, that her power of literary expression and her clearness of vision in the realm of abstract thought are fully revealed to us. The best illustrations are to be found in her lengthy correspondence with such men as William Jowett and John Stuart Mill, and in her great religio-sociological treatise, entitled "Suggestions for

Thought to Searchers for Truth among the Artizans of England and to Searchers after Religious Truth," published in three volumes, containing 729 pages in all, by Eyre and Spottiswoode, London, in 1860. Her yearly "Addresses to the Probationer Nurses in the 'Nightingale Fund' at St. Thomas' Hospital," printed for a limited private circulation during the years 1873 to 1888, stand out also as models of clear diction embodying principles of deep ethical and spiritual force. The nineteenth century has been called pre-eminently the century of great women. It is from the literary and philosophic, as well as the philanthropic side, that Florence Nightingale possesses an eminent place within the circle.

(To be continued.)

Society Report.

NEW ENGLAND PEDIATRIC SOCIETY.

THE FORTY-FOURTH MEETING OF THE NEW ENGLAND PEDIATRIC SOCIETY WAS HELD IN THE BOSTON MEDICAL LIBRARY, FRIDAY, APRIL 28, 1916, AT 8.15 P.M.

The President, DR. A. C. EASTMAN of Springfield, Mass., was in the chair.

The following papers were read:

I. SOME PHASES OF THE RECENT EPIDEMIC OF "ACIDOSIS."

By P. H. SYLVESTER, M.D., Newton.

II. IDIOSYNCRASY TO COW'S MILK. ITS RELATION TO ANAPHYLAXIS.*

By FRITZ B. TALBOT, M.D., Boston.

III. THE TREATMENT OF TUBERCULOSIS IN INFANCY.†

By W. W. HOWELL, M.D., Boston.

DISCUSSION.

DR. TALBOT (Dr. Sylvester's paper): Dr. Sylvester's paper has been very interesting and his experience is very much like mine. I want to draw attention to one statement which he made, that in speaking of acidosis and using the term acidosis, of the relation of ammonia to the total nitrogen in the urine as being of importance in determining an acidosis. This is in the main true when there is sufficient protein in the diet. The total nitrogen in the urine depends upon the protein in the food while the ammonia is more or less independent, so the relation becomes distorted and has no significance when there is a low protein in the diet. This should be borne in mind when anyone is drawing conclusions from the ammonia ratio. In the cases which I saw, one thing impressed me a good deal and that was the loss of water due to the extreme vomiting which did not allow water to get into the body, and the diarrhea, which withdrew water and salts from the body. I personally subdivide these conditions that we have been dealing with this winter, and previous years, into vomiting with acetonuria as shown by small amounts of acetone in the urine and vomiting—which is very common—and true acidosis. The only way that we have to determine true acidosis is by tests that are too difficult for physicians to use in their private work with the exception of the test recently advised by Marriott of Baltimore, in which the carbon-dioxide tension of the alveolar air can be determined very simply, by collecting the air in a rubber bag and running the air into a solution of 1/100 normal alkali and phenolphthalein, and comparing the resulting color with a set of tubes which give us known quantities of carbon-dioxide in the air. By them we can tell whether the alveolar tension is 40, 30 or 20, or even lower. It very rarely goes below 20. True acidosis is shown clinically by a diminished carbon-dioxide tension in the alveolar air. This is because, as Dr. Sylvester suggested, the salts are not present in large enough amounts to carry the carbon dioxide in the blood to the lungs. Clinically it is manifested by what we know as air hunger, and I believe that when we see air hunger we see acidosis, and when we do not see air hunger we have vomiting with acetonuria. In some of the instances, I believe that what we call vomiting with acetonuria does change into true acidosis, and I believe that the factor that decides whether it is or is not true acidosis is whether the body responds to alkali or not. The symptom upon which that is dependent in large part is diarrhea.

DR. SYLVESTER: (1) I would like to ask Dr. Talbot if he feels that there is any sharply dividing line between the children with air hunger with true acidosis, and children who have "vomiting with acetonuria"? Do you think that the children who have vomiting with acetonuria have sighing respiration or evidences of difficulty with respiration, or definite air hunger?

(2) Given a child who had a readily controlled acetonuria with vomiting and who was having a certain amount of sighing respiration, would you put that in the same class as a child with a true acidosis?

DR. TALBOT (Dr. Sylvester's paper): (1) I think that true acidosis is not a disease but a symptom. It is a late symptom which occasionally comes in the conditions that we have been talking about.

(2) If there is deep respiration you have air hunger and this is true acidosis; the air hunger may be like the other symptoms, it may be pronounced or it may be mild, and it is impossible to draw a sharply marked dividing line between whether there is air hunger or whether there is not. In the cases of air hunger which I have seen it has come on very quickly within one or two hours' time.

* See JOURNAL, page 409.

† See JOURNAL, page 411.

DR. CALDER (Dr. Talbot's paper): I wish to refer briefly to a case that came under my care. The baby was breast-fed, nine months old, when cow's milk was first given. This was taken all right and there was no vomiting, but the child had a very profuse urticaria in about one-half hour after taking. The breast milk was resumed and whenever attempts were made to give cow's milk in any quantity whatsoever the urticaria resulted and on several occasions an asthma with the urticaria. The child was given goat's milk once. This had to be forced and the child showed much more distaste for it than for the cow's milk. It was vomited almost immediately and was followed by a very intense asthma and urticaria. This child was nursed on the breast until one year, having cereals in the mean time and butter, which caused no general reaction although there was some local irritation where it had touched the skin of the face. This local irritation disappeared after the child had been given the butter for a few months. The child was brought along on cereals, butter and lamb juice, and to some extent on lamb meat, and potato, fruit juices and vegetables. The milk tolerance was increased by feeding the child ½ drachm every other day, gradually increasing the amount, it being six months before the child was able to take 8 oz. of cow's milk a day. This child had also an anaphylaxis to egg.

DR. TALBOT (after Dr. Calder's remarks on Dr. Talbot's paper): I was very much interested in the case that Dr. Calder reported. Evidently this baby was sensitive both to the milk of the cow and the goat, unless someone substituted cow's milk for goat's milk.

DR. TALBOT (Dr. Howell's paper): All the cases that we have had at the Massachusetts General Hospital with a positive von Pirquet under two years of age, except one, died. That one, so far as I know, is living. All the others that had negative von Pirquets that died that showed that they had tuberculosis, as I remember it, died of miliary tuberculosis. It is quite natural in infants dying of such disease, I think that there should be no repair. If there is repair, they will get well. If they get well and die of something else, how can you tell whether the disease came on during the first or second year of life? My impression of this discussion is that we are talking about human tuberculosis. I feel that in discussing this question, we have neglected bovine tuberculosis. At present in the findings in tuberculosis of the glands our impression is in the post-mortems, that more than half of them gain their entrance through the mesenteric glands and for that reason, and backed up by the work of the Royal English Commission, it looks as if much of the tuberculosis of infancy was of bovine origin. Again if it is of bovine origin, I should think if one tubercle bacillus were fed to that child every day that that child would have 1000% less chance of life than if only one tubercle bacillus gained entrance and the body had a chance to kill it.

DR. DENNY (Dr. Howell's paper): Dr. Howell expressed the opinion that there was danger of re-infection in children and Dr. Dunn expressed the opinion, as the result of his pathological work, that there is very little danger of re-infection. It seems to me that this is a very important question to know more about. It has a very practical bearing on the question as to whether it is safe to send a young child to a hospital where there are cases of open tuberculosis. I would like to hear some other opinion on that subject.

DR. SMITH (Dr. Howell's paper): Dr. Howell says that these cases ought to be treated as tuberculosis, and that they always have the disease. I would like to ask what he calls these cases when they get to be 10 or 15 years old—does he say that they have tuberculosis then?

DR. SMITH (Dr. Howell's paper): I would like to ask what distinction is made between tubercular infection and tuberculous disease. That distinction is one that ought really to be made. As I understand the distinction, tuberculous infection means the presence of tubercle bacilli in the body which are not active; tuberculous disease includes all cases during the active stage. These two types of the disease should be differentiated, for the treatment is quite different.

DR. DUNN (Dr. Howell's paper): I have only two objections to bring forward to the conclusions in Dr. Howell's paper; one of them is really not an objection. He speaks of the lesion at the portal of entry and the associated lymph-node process, as if both were included under the term primary lesion. This, I think, might give rise to some confusion in connection with the question as to whether there is or is not a lesion at the portal of entry. It would be better, I think, to speak of the primary pulmonary lesion and the associated lymph-node process together, as the primary stage of tuberculosis, and to confine the term primary lesion to the process found in the parenchyma of the lung. The question as to whether there is such a primary lesion at the portal of entry has been one of the disputed points in the pathology of tuberculosis. In my experience, such a lesion can always be found if carefully looked for.

I have been working on tuberculosis a good deal at the Infants' Hospital, and one point which has struck us is the close relationship between tuberculosis and syphilis. I think that tuberculosis, like syphilis, can be divided into primary, secondary, and tertiary stages. Some authorities regard the phthisis of adults as representing the tertiary stage of an infection acquired in infancy. I am in doubt as to whether this is a true distinction, but many observers believe that the phthisis of adults does not represent a fresh infection from without, but represents the lighting up of an old process, or a retrograde infection.

Another point in which I differ from Dr. Howell is, when he speaks of the danger or frequency of fresh infection from without. The study of the pathological material which we have been engaged in has rather convinced me that this is not a very great danger and that it very rarely occurs, and that the various widespread manifestations so characteristic of tuberculosis in infancy and childhood do not represent a fresh infection from without, but rather an extension from the lesions of the primary stage. This extension appears to take place in a very well-defined way so that it can be treated in nearly all post-mortem cases.

The trouble with tuberculosis in infancy, as Dr. Howell has said, is that the diagnosis has not been made until the secondary stage has developed. In the majority of cases one's diagnosis of tuberculosis in infancy depends on the existence of an acute tubercular meningitis or on the presence of a tubercular bronchopneumonia or some other lesion which represents the secondary stage. Another thing which has been very confusing in the understanding of tuberculosis in infancy is that I know of no American text-book on tuberculosis which makes

any good distinction between chronic pulmonary tuberculosis and the signs of the secondary lesions in the lungs found in children. It would be too much to say that chronic pulmonary tuberculosis is never found in the lungs of infants and children. Occasionally there is a condition of extremely increased activity of growth in the tiny primary focus which almost amounts to the lesions of phthisis. The usual changes in the lungs clinically may resemble consumption and may show the physical signs which are described in text-books as characteristic of phthisis and may run the came clinical course. But from the pathologic point of view these lesions are not the same as in the phthisis of adults, which represents an entirely different proposition. Tuberculous bronchopneumonia is the lesion characteristic of infancy and early life, acute phthisis being only rare.

We have been comparing the various clinical manifestations with anatomic findings. We have had a large number of tuberculous autopsies, but the main thing, as Dr. Howell says, is to make the diagnosis in an infant before the secondary stage has developed. That is the thing which has not been done. The diagnosis of tuberculosis either rests on finding signs of solidification of some kind in the lungs or on the existence of some other well-recognized form as meningitis or peritonitis. Without these signs, the diagnosis of the primary stage rests on three things,—the von Pirquet reaction, the enlargement of the bronchial lymph nodes, when they can be detected on physical examination, and when they cannot be detected, on an x-ray examination.

DR. DUNN (Dr. Howell's paper): The term infected with tuberculosis but not diseased is not applicable, because these infants are always in extreme danger. The number of infants which develop secondary processes which are fatal is very large. Another thing which bears on that point is that in children under two you practically never see the slightest tendency toward healing of the tuberculous lesion or repair. It is not such an important question as to how long we shall consider them subjects of tuberculosis, because there is absolutely no permanent way in which we can tell when the actual tuberculous infection dies out except through very careful examination of anatomic material. Certainly in children under two it seems to me to be a much better thing to regard every child that shows evidence of infection with tuberculosis as a victim of tuberculous disease and to treat it in that way.

DR. HOWELL: I made the statement that I criticized the terms tuberculous infection and infected with tuberculosis merely because I believe that the primary stage of tuberculosis or the primary lesion always gives symptoms—that is, when a baby is infected with tuberculosis he probably has a reaction at that time. He may have fever. I have never seen a case at the beginning of the primary stage but I believe there are always symptoms. So I do not see why he has not a disease merely because he does not have symptoms recognized as those of tuberculosis. He always has the glands, and they are active enough to keep up his reaction shown by the von Pirquet. He always reacts, so he always has a diseased process. The expression infected with tuberculosis always makes me think of the old physician who called a surgeon in consultation from Chattanooga, Tenn., to see a case of inoperable uterine cancer. The surgeon asked the old physician if he had ever considered it was cancer, and he replied that he had never made up his mind that it was really cancer, but he had always suspected it was of a cancerous nature. To my mind the term infected with tuberculosis comes into that class. If you are getting symptoms that cannot be explained in any other way and find glands and suspect tuberculosis, treat it as a case of tuberculosis until there is improvement. At the Infants' Hospital we see a good many babies who die who might have been saved if the disease had been recognized early. Last Sunday we had 25 per cent. of the cases in the wards with tuberculosis, the disease having been recognized in only five cases before they were admitted, and they were in the hopeless stage at that time. I think it is a very dangerous thing to make a diagnosis between infected with tuberculosis and tuberculous disease. I believe if they once have it they always have it and they are always in danger.

Book Reviews.

Principles of General Physiology. By W. M. BAYLISS, Professor of General Physiology, University College, London. New York: Longmans, Green & Co. 1916.

No general work on physiology which has appeared in recent years has been welcomed more eagerly or more deservedly than this book of Professor Bayliss. The facts it presents are of fundamental interest and importance to physiologists and to progressive medical men. Many of them have been hitherto available only in the original papers scattered over a large number of publications. In bringing these together in compact and readable form, an inestimable service has been performed.

The plan of the book is admirable. Each chapter ends with a condensed summary of its contents and references to the literature of special interest. A feature which adds greatly to the book is the series of portraits of leaders in physiological investigation,—a series in itself of great interest. The attempt has been made to present important facts that deal with the subject of general physiology. There is also a consistent effort to interpret these facts intelligently. Although, as the author admits, interpretation is often a matter of individual opinion, and therefore subject to error, his contention that a logical interpretation, even though finally shown to be erroneous, is better than a muddled presentation, will be approved by most fair-minded readers. A very complete bibliography covering 82 pages is inserted at the end of the book. No worker in physiology or medicine, who desires to keep abreast of current thought, can afford to disregard the facts presented in this book.

Lateral Curvature of the Spine and Round Shoulder. By ROBERT W. LOVETT, M.D., BOSTON. Third edition, revised and enlarged; with 180 illustrations. Philadelphia: P. Blakiston's Son & Co. 1916.

The third edition of any medical textbook means that it has been found useful and that the principles which it enunciates are considered by competent authority to be sound.

Perhaps no branch of orthopedic surgery has had such close attention concentrated upon it as the subject of scoliosis, its origin and its cure. Despite this fact we find today that its etiology is still unsettled and its treatment far from uniform. When men of such large experience as Schultes, in Zurich; Schanz, in Dresden; Lovett, in Boston,—all differ as to the most efficient method of its control, it proves that it is a subject that demands clear description of its symptom-complex, a lucid exposition of the different methods of treatment and a nice balancing of evidence as to the relative value of these methods. These demands the book meets in a fair and impartial manner and in addition devotes a chapter to the history of scoliosis and another to faulty attitude and round shoulders. It is a book which is extremely useful to both practitioners and medical students. It embodies results of wide personal experience and displays an intimate knowledge of the work of other men.

A Manual of Practical Laboratory Diagnosis. By LEWIS WEBB HILL, M.D., Graduate Assistant, Children's Hospital, Boston. Boston: W. M. Leonard. 1916.

The author's frankly stated reason for adding this excellent manual to the many other existing works on laboratory diagnosis is to provide a volume of convenient and suitable size for carrying in the pocket, which shall afford for house officers and medical students a means of immediate ready reference, unconfused by the presentation of a number of alternate methods of performing any given test. Much material usually incorporated in laboratory manuals is purposely omitted, only that being included which is practical for use by the average medical man. Hence the Wassermann reaction, the Gold chloride test and various methods of tissue staining are not included, since they are not ordinarily performed by students, house officers and general practitioners, for whom this book is intended. The work is divided into eight chapters dealing respectively with the urine, the blood, the feces, gastric contents, spinal fluids, pleural and peritoneal fluids, sputum, and such miscellaneous topics as the Gram stain, the stain for spirochaeta pallida, the Schick test, the von Pirquet test, tables of Gram positive and Gram negative organisms and of diseases in which leucocytosis is present or absent. Each page is printed on only one side, the blank side thereby affording convenient space for notes. The book is illustrated with eleven figures and eight plates, four of which are colored, and is to be cordially commended to the use of those for whom it is intended.

Back Injuries and their Significance under the Workmen's Compensation and other Acts. By ARCHIBALD MCKENDRICK, F.R.C.S.E., etc., Surgeon in Charge of Surgical X-ray Department, Royal Infirmary, Edinburgh. New York: William Wood & Company; Edinburgh: E. and S. Livingstone. 1914.

A small volume of 150 pages by McKendrick of Edinburgh. McKendrick is apparently both a surgeon and a roentgenologist. He seems to be also an excellent anatomist. He discusses in succession the structure of the spinal column, the muscles and fascia, the detail of examination and symptomology, and the various x-ray and other special methods of examination.

The book is an excellent little manual. In common with many other small volumes, it lacks a brief conclusion at the end of each chapter. This is perhaps of less importance in so small a volume, but would have been a distinct addition.

Dr. McKendrick does well to call attention so convincingly to this somewhat overlooked class of injury, which is too often a permanent disability to a working man or woman.

Skin Cancer. By HENRY H. HAZEN, A.B., M.D. Ninety-seven text illustrations and one colored frontispiece. St. Louis: C. V. Mosby Co. 1916.

Dr. Hazen of Washington, the author of this book, defines his purpose as an effort to gather under one cover the latest views on malignant tumors of the skin, and to give his personal experience, gained chiefly in the surgical, pathological and dermatological departments of the Johns Hopkins Hospital. The subject lends itself naturally to profuseness of illustration, and this feature has been very completely exploited by the author. Many of the illustrations, which have been contributed by the author's colleagues as well as by himself, are of great excellence; others could have been omitted without detracting from the general result. Much space is devoted to the subject of treatment, and the different methods and their applicability in individual cases are very fully and fairly set forth.

THE BOSTON
Medical and Surgical Journal
Established in 1812

An independently owned Journal of Medicine and Surgery, published weekly, under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, SEPTEMBER 21, 1916.

SUBSCRIPTION TERMS: *$5.00 per year, in advance, postage paid, for the United States. $6.56 per year for all foreign countries belonging to the Postal Union.*

An editor will be in the editorial office daily, except Sunday, from twelve to one-thirty p. m.

Papers for publication, and all other communications for the Editorial Department, should be addressed to the Editor, 126 Massachusetts Ave., Boston. Notices and other material for the editorial pages must be received not later than noon on the Saturday preceding the date of publication. Orders for reprints must be returned in writing to the printer with the galley proof of papers. The Journal will furnish one hundred reprints free to the author, upon his written request.

The Journal does not hold itself responsible for any opinions or sentiments advanced by any contributor in any article published in its columns.

All letters containing business communications, or referring to the publication, subscription, or advertising department of the Journal, should be addressed to

ERNEST GREGORY, *Manager,*
126 Massachusetts Ave., Corner Boylston St., Boston, Massachusetts.

TRANSMISSION OF POLIOMYELITIS.

As the leading article in this issue of the JOURNAL, is published an important paper by Dr. Mark Richardson of Boston, formerly secretary of the Massachusetts State Board of Health, advancing a new theory of the transmission of poliomyelitis. The author reports investigations, experience, and arguments indicating that the rat-flea is really the responsible agent in the transmission of the disease, as in the case of bubonic plague. A similar suggestion has recently been made in New York, involving a mosquito as the possible transmitting agent. This contention, however, is as yet unproved. The confirmation of Dr. Richardson's theory must rest on further observation and experiment. If, as a result, the rat-flea is determined to be the actual transmitter of the infection of poliomyelitis, a cardinal step will have been taken toward the control of this serious scourge, and Dr. Richardson's theory established as a notable and beneficent contribution to medical knowledge and human relief.

STATE CONTROL OF MEDICAL PRACTICE.

THERE is considerable dissatisfaction in various sections of the Commonwealth with that portion of the Workmen's Compensation Act which gives insurance companies the right to "furnish" medical attendance. This right to "furnish" practically is the right to "name" the physicians who shall treat injured employees. In his admirable article, which we print in another column, Dr. Francis D. Donoghue has pointed out "some medical aspects of the Workmen's Compensation Act" which should interest all physicians. He shows that the law, since it first became effective in 1912, gave insurers the right to "furnish" treatment and that only the liberal interpretation and the influence exerted by the Industrial Accident Board gave physicians a greater opportunity to render medical aid to injured employees than was contemplated when the law was passed, if we consider the wording of the original act.

The latest important liberal medical decision of the Board, that made in the Pecott case, was reversed by the Supreme Judicial Court, and physicians have become alarmed at the possible effect of this reversal. A campaign has been undertaken for the purpose of arousing medical men to the necessity for a change in the law. Many men argue for the free choice of physicians by injured employees alone; others think that either the Industrial Accident Board or the Insurance Commissioner should be given power to supervise exclusively this important matter; and the suggestion has been made, tentatively, that a list of acceptable physicians be prepared and that the selection of a medical man by either employee, employer, or insurer be restricted only to the names given in such a list.

It should be remembered, in considering new legislation, that unrestricted choice of physicians by employees will probably result in the establishment of a state-wide fee table. Such fee tables are in effect in other states and, of course, are much below the standard of fees now being paid under the "average minimum" approval standard of the present Workmen's Compensation Act. It may be, also, that absolute free choice will tend to eliminate competition between the present 27 insurance companies and bring about the concentration of all the compensation business under one insurance com-

pany, with whom all would be required to transact business under direct state supervision. There is a possibility that the problem may be solved by the combination of "free choice" under a supervising consultant, agreeable to and appointed by the insurance companies.

While only a few of the 27 insuring companies insist upon their right to "furnish" and name physicians, these few companies insure more than one-half of all the employees covered by the compensation law. Whether this indicates that the few, with most of the business, find "furnishing" physicians more economical than "free choice" is not known. The presumption, however, is that cost is a factor and that the prestige and influence of these companies must be considered when new legislation is proposed. Whatever action the medical men take, appreciation should be shown by all of the broad spirit which has actuated the Industrial Accident Board in dealing with the rights of physicians and surgeons for service rendered injured employees

PROGRESS OF POLIOMYELITIS EPIDEMICS.

During the past week the epidemics of poliomyelitis in New York and New Jersey have shown definite abatement, whereas those in New England have shown equally definite increase. In New York City the number of cases on September 13 reached a total of 8,614, with 2,151 deaths. In New York State, outside New York City, the number of cases on this date reached a total of 2,690 with 285 deaths. In New Jersey there has been a total of 2,478 cases. There have been 1,149 cases with 288 deaths in Pennsylvania, 122 cases in Chicago and 78 in Toledo. In Illinois, including Chicago, there have been 355 cases; in Minnesota, 142; in Ohio, 94, in Mississippi, 57; in Michigan, 51; and in Iowa, 30.

In New England there have been 14 cases in Maine, 76 in Rhode Island, and 608 in Connecticut. In Massachusetts on September 14 the number of cases reached a total of 239 with 26 deaths since September 1.

At the conference of state and territorial health officials, held on August 17 and 18, at Washington, D. C., in conjunction with the United States Public Health Service, two committees were appointed, one to recommend a uniform method of collecting, recording and transmitting statistics and information regarding the progress and control of the disease. This committee was composed as follows:

Surg. C. H. Lavinder of the Public Health Service, chairman; Dr. W. C. Woodward of the District of Columbia; Dr. C. St. Clair Drake of Illinois; Dr. A. G. Young of Maine, and Surg. J. W. Trask of the Public Health Service.

A national survey at the time of the meeting showed that in the thirty-eight states and territories whose representatives were present, there had been since January 1 of this year a total of 11,717 cases of poliomyelitis, the largest number ever recorded in any epidemic within the same period of time.

The second committee was appointed to propose methods for control of the epidemic, including regulations of transportation. This committee was composed as follows:

Dr. John S. Fulton of Maryland, chairman; Dr. T. D. Tuttle of Washington State; Dr. E. G. Williams of Virginia; Dr. H. H. Braekman of Minnesota and Surg. Charles E. Banks, head of the Public Health Service corps, fighting the disease at New York.

In the weekly bulletin of the United States Public Health Service for September 1 is published the report of this latter committee, whose recommendations are, in part, as follows:

"I. It is the sense of this committee that the first step proper to be taken by a State health authority, believing its territory to be in danger of an invasion by poliomyelitis from another State or part of a State, is to call the attention of the United States Public Health Service to the situation believed to be dangerous, and to request the United States Public Health Service to take whatever steps are necessary to prevent the interstate spread of poliomyelitis.

"II. The necessary steps ordinarily to be taken by the United States Public Health Service in such a contingency are believed to be:"

(This section describes methods to be observed in investigation of infected areas, notifications of removal, identification of travelers, permits to travel, collection of fees and certification by private physicians.)

"III. The committee disapproves quarantine by one State against another State or quarantine by one community against another community in the same State. It is believed that the Federal Government, through the United States Public Health Service, can perform all the duties of notification and certification required in interstate relations in case of unusual prevalence of poliomyelitis, and that State health authorities can and should perform like services as between communities in the same State during unusual prevalence of poliomyelitis.

"IV. It is recommended that all cases of poliomyelitis should be reported immediately to the

local health authorities and to the State health authorities, and that State health authorities make weekly reports to the United States Public Health Service of all cases of poliomyelitis. The United States Public Health Service is asked to furnish general reports weekly.

"V. It is recommended that all persons 16 years old or under, with a clean bill of health, and removing from an infected area or district to another locality, should be kept under medical observation daily for two weeks from the date of the certificate.

"VI. It is believed that the period of isolation of a case of poliomyelitis should be not less than six weeks from date of onset.

"VII. The isolation of cases of poliomyelitis should be stringent isolation of the sick person with attendant or attendants, in a properly screened room or rooms, with disinfection at the bedside of all bodily excretions. Wherever it is possible, the removal of patients to a hospital is greatly to be preferred to isolation in a private house or apartment.

"VIII. In case of death from poliomyelitis the funeral should be strictly private.

"IX. Wherever poliomyelitis is unusually prevalent, assemblages of children in public places should be prohibited.

"X. During unusual prevalence of poliomyelitis, schools should not be opened without thorough medical supervision by a health authority. When schools are opened, beginning should be made with high schools, and proceeding to lower age groups no more rapidly than complete medical examinations can be made.

"XI. Because of the existence of unknown carriers of the infectious virus of poliomyelitis, and because the infectious virus is present in the body discharges of such persons, therefore all measures to prevent contamination by human excreta or other bodily discharges, the suppression of the fly nuisance, prohibition of the common drinking cup, and a general educational campaign for cleanliness and sanitation, with particular instruction of parents and children concerning personal hygiene, especially of the mouth and nose, are urgently recommended."

Attention is further directed to two communications published in the correspondence column of this issue of the JOURNAL, one recording an interesting clinical case of poliomyelitis, the other emphasizing the importance of diagnosis of the lighter forms of this disease. If, as at present supposed, the wide dissemination of poliomyelitis is due to these unrecognized mild cases and to carriers, their study by general practitioners is of especial urgency since upon their recognition and isolation may depend the safeguarding of large numbers and the prevention of the establishment of new foci in uninfected regions.

AMPUTATION WITHOUT SKIN FLAPS.

A GREAT war is always replete with experience for surgeons and the present one is no exception. Amputations especially are proportionately much more frequent than they are in times or peace, chiefly because of the prevalence of gangrene, due to the necessity of leaving badly wounded men without surgical aid for days at a time. It is natural then that the technic of amputation should receive careful attention; many surgeons, for instance, advocate plane section on the battle field or at the base hospital with a secondary operation along conventional lines later on when the patient has been removed from the front. The advantages alleged for this procedure are quickness and ease of performance and the avoidance of pockets to fill up with pus. Against this method is urged the experience that soldiers refuse a secondary operation and thus are left with a surgically bad stump.

Another method, which would hardly be sanctioned in normal times, is that of flapless amputation. Writing in the *British Medical Journal* for April, Dr. Fitzmaurice-Kelly describes his experience with this method which he heartily favors. He claims that it saves the maximum length of limb and, in many cases, life itself. He considers this form of treatment absolutely indicated in gangrene, and the method of choice in certain cases of compound and comminuted fractures and in multiple wounds. In cases of gangrene, he says, the entire skin of the limb appears to be unhealthy and when flaps are cut these invariably slough and start a gangrenous process in the stump. On the other hand, if a flapless amputation be done, section can be made just above the gangrenous area, as low as, or lower in fact than, the point where the skin flap is usually started.

Fitzmaurice-Kelly states that there is practically no secondary hemorrhage with this method, that it arrests the spread of infection, and that it can often be done where no other method is possible. The chief disadvantages appear to be the necessity of a second operation, the obvious discomfort and danger of a large, open, granulating surface and the occasional development of ascending neuritis. Even if these objections be valid, the advantages would seem to outweigh them, especially in view of the lack of success of the classical amputation in gangrene so far.

THE RECORD OF A MEDICAL CLASS.

We have recently received from the secretary of the class of 1911 of the Harvard Medical School a class report, the first which this class has issued. The publication of such reports has not been usual with medical, as it is with academic classes, and its appearance is a matter of considerable interest not only to friends of members, but to those who are glad to watch the progress of their junior colleagues in medicine. There is an excellent preface by the secretary, a statement of the class finances, a class directory, four pages of class statistics and a report of the class dinner held this year. The remainder of the volume consists of a series of brief sketches of the lives of the members, eighty-nine in number. At the close is a map of the United States representing the geographical distribution of the class in practice. Thirty-eight are in Boston or in its vicinity, one is in China, and the remainder are scattered in the north and middle West and along the Pacific Coast. The cordial appreciation and congratulations of the JOURNAL are extended to the class upon this record of its work.

MEDICAL NOTES.

THE NEW YORK MORTALITY RATE.—During the past week one hundred and fifty-two deaths were reported as due to infantile paralysis, as compared with 209 during the previous week and 301 for the week ending August 12th. The epidemic is evidently fast burning itself out. There seems to be every prospect of conditions again reaching normal within the next two weeks. It is encouraging also to note that the mortality of the contagious and diarrhoeal diseases continues to remain lower than during last year. The mortality of the following diseases was lower during the past week than during the corresponding week of last year: measles, whooping cough, typhoid fever, cerebro-spinal meningitis, diarrhoeal diseases, pulmonary tuberculosis and diseases of the nervous system. The total number of deaths reported during the week was 1,388 as compared with 1,515 reported during the previous week, the death rate for the past week being 12.96, as against 14.13 for the week ending August 26th. The death rate for the first thirty-six weeks of 1916 was 14.51 and the death rate for the corresponding period last year, 14.42. In commenting on the figures, Commissioner Emerson pointed out that there was every prospect of having a lower general death rate in New York City this year than ever before. "In view of the outbreak of grip last January, and especially in view of the 2,000 deaths from infantile paralysis this summer, this is a remarkable showing."

PREVALENCE OF MALARIA, MENINGITIS, PELLAGRA, SMALLPOX AND TYPHOID FEVER.—The weekly report of the United States Public Health Service for September 1, states that during the month of July, 1916, there were in Mississippi 21,091 cases of malaria, 1,047 of pellagra and 1,205 of typhoid fever. In Virginia during the same period there were 982 cases of malaria, 16 of cerebro-spinal meningitis, 73 of pellagra and 699 of typhoid. There were 18 cases of meningitis in Ohio, 94 cases of smallpox and 319 of typhoid. There were 85 cases of smallpox in Michigan and 223 of typhoid each in Indiana and Kansas.

A SULU HOSPITAL SHIP.—Report from New York on August 17 states that the Philippine Government, in coöperation with the International Health Board of the Rockefeller Foundation, is to send a hospital ship to the Sulu archipelago. These islands are inhabited by about 200,000 Moros and other savage tribes. It is planned to maintain the service of the hospital ship for at least five years.

CHANGES IN DRUG PRICES.—Report from New York on September 9 records a few recent changes in the cost of drugs, especially an increase in the price of glycerin.

"A gradual advance is taking place owing to the ever-strengthening position of the crude and dynamite grades which have been practically withdrawn from sale. Another advance of 1 to 1½ cents per pound was named in the chemically pure grades yesterday, the new offering price in drums being 42@42½ cents.

Selling agents for quicksilver have reduced their prices $4 to $76 per flask of 75 pounds. This decline is attributed to the favorable settlement of the railway strike.

Peppermint oil continues to advance, $2.25 being now inside for bulk. An advance to $1.75 @$1.80 has taken place in spearmint in sympathy with the rise in mint oil. Newfoundland cod liver oil is reported materially weaker at $72 per 30-gallon barrels, a decline of $3."

EUROPEAN WAR NOTES.

PERSONNEL OF HARVARD UNIT.—In the issue of the JOURNAL for August 21 we noted the sailing of another reinforcement for the Harvard Surgical Unit at the front in France. The surgical personnel of this unit was as follows:

Dr. Daniel Fiske Jones, Boston; Dr. Lucius C. Kingman, Providence, R. I.; Dr. Sumner W. Jackson, Waldoboro, Me.; Dr. Harold W. Stevens, Cranberry Island, Me.; Dr. Hammer C. Irwin, Wilmington, N. C.; Dr. Robert H. Vose, Boston; Dr. Benjamin H. Alton, Lynn; Dr. Paul D. White, Boston; Dr. George P. Denny,

Boston; Dr. Orland F. Montgomery, Rangeley Lake, Me.; Dr. William A. Frontz, Baltimore.

APPEAL FOR SERBIAN RELIEF.—A committee authorized by the French and Serbian Governments, and approved by the Serbian Relief Society, is raising funds to meet the urgent need of support for field hospitals among the Serbian army in Saloniki. This committee has recently issued an appeal based upon the following letter recently received from a French woman in Saloniki.

"Our friend G— and I were considering yesterday in what way we could help the Serbian army, which is now reconstructed and stationed here.....They have nothing—less than nothing—and must necessarily have recourse to the French hospitals. It is because of this that I have in my charge the care of the Serbian officers and soldiers. I talked yesterday with the chiefs of their medical service, and their anguish was great, for they have nothing,—neither hospitals, nor ambulances, nor transports, nor automobiles,—and in their intense desire to be again at the frontier of their own country they are asking each other how they will be able to transport their wounded and sick.

England and France already have a heavy burden. The French hospitals here are far from sufficient, and we need so many beds. The personnel is good, but the material necessities are lacking, both beds and ambulances.

I am head nurse in the largest quarantine hospital here (1500 beds), set apart for contagious diseases. We are working day and night now, and the heat is overwhelming, and all the diseases that we dread are spread by it. The overcrowding is great and the Serbian soldiers, who have only a few beds, are scattered here and there.

It is necessary to see this to feel all the horror of it. Even now we are put to the test by the sickness alone of the Allied armies. What will it be when they start fighting?

Please forgive my importunity, for now anything seems permissible and your country is such an immense storehouse and her generosity is incomparable. Consider that all our gold and all our reserve stores have been turned into ammunition, cannon and bullets. Though we are now in the middle of summer the third winter is approaching, bringing with it new sufferings."

Subscriptions towards the maintenance of a hospital for the Serbian army should be sent to the Franco-Serbian Field Hospital of America, 17 West 30th Street, New York City.

GERMAN ARMY DENTISTRY.—In the spring of 1916, a meeting of German civilian surgeons and dentists was held in Berlin, at which Surgeon-General Schultzen presented a statement of the organization and work of the German Army dental service. This statement is abstracted as follows in a recent issue of the *British Medical Journal*:—"The work fell into two main divisions—the treatment of wounds of the jaw, which was the more important, and the everyday treatment of soldiers' teeth, including the making and fitting of artificial teeth, to render the men fit for active service or employment on war duties. The incidence of wounds of the jaw had, he said, far exceeded expectations, with the result that five dentists had to be attached to each army corps, although, under an arrangement made in 1907, only one dentist was provided for each. Dentists were appointed to military hospitals where adequate facilities were provided for skilled work, and were employed also to a certain extent nearer the firing line, when the fighting assumed a stationary character. In fracture of the jaw, the primary object of the dentist was to immobilize the fragments in order that the patient might be sent on at once to a special jaw hospital at home, where extensive operations could be undertaken. About 1,000 dentists were employed by the army on the lines of communication and at home. The organization had worked smoothly. It had been hoped that, owing to the supervision and treatment of school children's teeth, the teeth of the recruit would be found on the whole to be sound. But between the school age and the military age there was evidently time enough for neglect of the teeth to provide plenty of work for the army dentist."

WAR RELIEF FUNDS.—On September 15 the totals of the principal New England relief funds for the European War reached the following amounts:—

Secours National Fund	$210,354.17
French Wounded Fund	118,574.56
French Orphanage Fund	61,875.93
Belgian Tobacco Fund	58,650.00
Surgical Dressings Fund	46,322.37
Prince of Wales Fund	14,731.92

MEXICAN NOTES.

HYGIENIC CONDITIONS IN MEXICO.—In last week's issue of the JOURNAL we noted the relatively low disease and death rates among the United States troops at the Mexican frontier. Report from field headquarters of the American Punitive Expedition in Mexico on August 23, states that during the past five months the members of this expedition have suffered only six deaths from disease. The present sick rate is 1.5, which would be increased to 2.5 if a number of patients treated at the base hospital were added to those in the field. There has been a good deal of amebic dystentry among the soldiers, which was controlled by means of chloride disinfection of the water supply.

On August 23, Dr. Thomas Darlington of New York, representing the National Civic Federa-

tion, made the following report of his recent tour of inspection among the troops at the frontier and in Mexico:

"I have inspected the base hospitals at San Antonio, El Paso, Nogales and Douglas, and have seen the troops in the field. I spent four days at Colona Dublan, headquarters of General Pershing's forces. The camp is most interesting. I don't suppose there will ever be another one like it. To be sure, conditions are not ideal; the flies are pretty thick, but the point is, in Mexico, as along the Border, army officials have done their best for the comfort and health of the men."

There are, at present, sixteen hospitals of the War Department established along the Mexican border. These are already equipped to accommodate 2,500 patients and when completed will have a capacity of 4,500.

MASSACHUSETTS VOLUNTEER AID FUND.—On September 16, the total of the Massachusetts Volunteer Aid Association fund for the relief of families of Massachusetts troops at the Mexican frontier reached the amount of $75,990.15.

BOSTON AND NEW ENGLAND.

WORK AND NEEDS OF CARNEY HOSPITAL.—A recently published fifty-second annual report of the Carney Hospital records the work and progress of that institution during the past year.

"The number of patients admitted during the year was 3,756; the number discharged, 3,589; died, 153; remaining, 132. The expenses for charity patients were $16,752.80.

"The Sisters of Charity of St. Vincent de Paul in their report call attention to the desirability of the erection of the south wing, intended in the original plan, but held back because of inadequate means.

"Eighteen cases in the out-patient department and three in the hospital were treated in the radium therapy clinic from its beginning, Dec. 22, 1915, to April 1, 1916.

"Of it the Sisters say: 'Among the movements of 1915 which have been of great interest in bringing us new aids in our efforts to better the condition of suffering humanity, the most important is the gift of radium by Professor M. Douglas Flattery for the establishment of a clinic. Radium treatment, beneficial in many conditions, is rapidly being granted priority over other treatments in the cure of malignant disease.'

"Another contemplated improvement is a Nurses' Home, to be erected opposite the hospital on the site of the three small buildings now occupied by the nurses, yet affording insufficient accommodations."

Dr William H. Devine, president of the staff, calls attention also to the desirability of adding a solarium to the equipment of the Hospital. This could be done by building a series of piazzas on the south side of the Hospital, each piazza to accommodate thirty patients.

FLOATING HOSPITAL'S EXCHANGE.—On a recent trip of the Floating Hospital, stop was made at Bumpkin's Island. The doctors and nurses of the Burrage Hospital and those of the Floating Hospital exchanged places during the stop, those of the Floating Hospital taking charge of the Burrage Hospital and giving up the care of the boat to the doctors and nurses of the island hospital. The Long Island Hospital has invited the Floating Hospital to make a similar exchange with its institution.

THE WEEK'S DEATH RATE IN BOSTON.—During the week ending Sept. 16, 1916, there were 216 deaths reported, with a rate of 14.81 per 1000 population, as compared with 234 and a rate of 16.30 for the corresponding week of last year. There were 50 deaths under 1 year, as compared with 57 last year, and 56 deaths over 60 years of age, against 64 last year.

During the week the number of cases of principal reportable diseases were: diphtheria, 29; scarlet fever, 16; whooping cough, 13; measles, 20; typhoid fever, 11; tuberculosis, 54.

Included in the above were the following cases of non-residents: diphtheria, 12; scarlet fever, 1; tuberculosis, 8.

Total deaths from these diseases were: diphtheria, 1; measles, 2; tuberculosis, 20; whooping cough, 2.

Included in the above were the following deaths of non-residents: tuberculosis, 3; whooping cough, 1.

Obituaries.

EUGENE POTTER STONE, M.D.

DR. EUGENE POTTER STONE, U.S.N., RETIRED, died at North Sutton, N. H., on September 5, 1916. He was a native of Boston and graduated from Harvard Medical School in 1884, entering the navy very soon, and spending his life in the service until he was retired five years ago, because of illness. Just previous to his retirement he was in charge of the naval hospital at Manila. From 1884 until 1890 he was a Fellow of the Massachusetts Medical Society. He is survived by his widow, who was Miss Margaret Grant of Brookline, and by two sons, one of them a student at Harvard Medical School.

REUBEN WILLIS, M.D.

DR. REUBEN WILLIS, of Somerville, Mass., died at the Robert Bent Brigham Hospital, Roxbury, Mass., September 6, 1916, as a result of cerebral hemorrhage, aged 73 years. He was born in Belchertown, Mass., September 14, 1842, the son of Jacob and Siley Fletcher Willis; enlisted as a private in the Twenty-fifth Massachusetts

Volunteers, in 1861, and saw service in the attack on Roanoke Island and at the Battle of Newbern, being mustered out November 23, 1863. He was graduated from Harvard Medical School in 1867, and practised in Somerville, where he was a member of the staff of the Somerville Hospital. He joined the Massachusetts Medical Society in 1870, and was retired in 1908. He is survived by his widow, who was Miss Eugenia Stowe of Arlington, and by one daughter.

Miscellany.

THE LILIENFELD X-RAY TUBE.

In a recent issue of the *Scientific American* is published a summary of an article in *Die Umschau*, describing a new type of tube for the production of x-rays, named after its inventor, Lilienfeld. Under ordinary circumstances the rays are given off by the metal surface of the anti-cathode under the influence of a bombardment of cathode rays thrown out from the negative pole of a Crookes tube when the latter is discharged by a high tension current.

"The more nearly perfect the vacuum in the tube, the higher tension required for the discharge, and the 'stronger,' or more penetrating, the resulting Roentgen rays. 'Strong' tubes, giving strong rays, are used for taking shadowgraphs of the denser, bony parts of the body; weaker ones, for the less dense tissues. In order to be equipped to meet any case that might arise, the surgeon must keep on hand an array of tubes of different strengths. Nor is that the only disadvantage of the tubes in ordinary use. For any given tube a certain fixed current is proper; and if a stronger (or weaker) current should by accident be used, air passes out (or in) through the walls of the tube and strengthens (or weakens) the vacuum, and hence the tube. To be sure, the original degree of hardness can be restored, but only by a long and complicated process.

The Lilienfeld tube is free from these disadvantages. The vacuum is practically perfect; so it can be used without special preparation. Its operation involves rather more complicated theory than does that of the ordinary tube, but no more care or attention is demanded of the operator. The anti-cathode, which also serves as positive pole, projects from the top. The long narrow central tube contains the Roentgen cathode, bored from end to end parallel to the axis of the tube. Between the negative pole, situated in the obliquely projecting tube below, and the anti-cathode, a high tension is maintained. The discharge of cathode rays is not induced by this current, but takes place in the filament in the lower bulb, which is made incandescent by an auxiliary current. These rays are driven violently upward through the boring by a high-tension current arranged for the purpose; and their passage making the upper part of the tube conductive, a strong Roentgen discharge then takes place. This accelerates the cathode rays even more, and they fall upon the surface of the anti-cathode with great force, causing the latter to give off the desired rays.

If the current in the auxiliary circuit is increased, more cathode rays will be thrown out by the filament, the tube will conduct better, and the Roentgen rays will be stronger. So that by the manipulation of a resistance switch in the auxiliary circuit, Roentgen rays of any desired strengths may be instantaneously produced, one after another, and employed successively in photographing regions of varying permeability. The extremely high vacuum excludes the possibility of accidental strengthening of the rays through loss of air from the tube. Again, in the new model the primary high tension current does not itself have to make this vacuum conductive, since the filament sends its cathode rays through the entire tube. And on account of the small bore, these fall upon the anti-cathode in a very close, dense bundle, and produce there a tiny bright spot, from which the Roentgen rays are given off sideways, to the left. The close approach of this source of the rays to a single point insures a sharp and finely differentiated negative. In the old apparatus, on the other hand, some of the cathode rays fell upon the glass walls of the tube, heating them to incandescence, so that there was a certain loss of power. Furthermore, the life of the rays is considerably greater in this new device than in the old, making possible longer exposures and photographing of regions heretofore impermeable.

Most notable among the advantages of this new apparatus is the way in which it reduces Roentgen photography to a mechanical operation. By mere adjustment of an indicator on a scale the current is so regulated as to give a sheaf of Roentgen rays of proper strength.

The chief advantages of the Coolidge tube have been experienced in the field of Roentgen therapy; those of the Lilienfeld tube promise to affect rather the field of skiagraphy. Its value and merits must await the determination of experience.

DECLINING BIRTH RATES.

In a recent number of the *Journal of State Medicine*, Sir Thomas Oliver, M.D., of the University of Durham, writes an interesting article on the subject of declining birth rates. He regards as primary influencing causes the emancipation of women and the great change in living conditions during recent years. He states:

"The increasing absorption of young women into spheres of commercial and industrial activity, while tending to lighten the bur-

den of parental obligation, is creating problems which in their final issue concern the future of the race. As effects of the withdrawal of female life into industry, mention may be made of the weakening of the home instincts, a love of independence, and a growing taste for pleasure and excitement, so that if marriage is entered upon, there is a growing unwillingness to accept the duties and responsibilities of motherhood."

During the past thirty years the greatest decline in birth rate among leading countries was in England, which declined 25%. Russia had the least decline, 1%. Between these extremes come Austria, Denmark and Switzerland with 12%, Italy and Finland with 13%, Sweden with 14%, Norway with 16%, Germany with 18%, Holland with 19%, and Belgium and France with 21%. For comparison, the decline in Boston for the past twenty years is 8%. As to increase in population since the Battle of Waterloo, Oliver makes the statement that France has increased one third, Great Britain and Ireland have doubled in numbers, Germany has quadrupled and Finland has increased three times. Italy stands at one-half more and Austria one and one-half. The fluctuations of numbers of inhabitants in Italy are given with Fricks as an authority. In 220 B.C. the population numbered twenty-two million, by 2 A.D. it was less than half this figure and decreased to five millions two centuries later. At the beginning of the second Punic war there were 270,000 citizens fit to bear arms, and at the time of Augustus, there was doubt whether 45,000 men could be raised. This reduction took place during a long period of peace, and is an example of a nation which has attained a high position in civilization, and then thrown aside those implements which have enabled her to gain this position.

"A nation's worth," writes Dr. Oliver, "like a nation's hope, rests not necessarily on one class of society, but upon the members of all classes who are thrifty, who are leading normal lives and who are discharging simple duties to the family and to the state."

In this connection it is interesting to note the statements of Professor Walter F. Willcox of Cornell, in the March number of the *Journal of Heredity*. In regard to the decline of both the death and birth rate, he believes that the death rate can and it must be controlled by the education of the people. He does not regard this decline of births, however, as an unmixed evil, for he states that had the birth rate not diminished, the population of Europe would now, but for the war, be increasing faster than the wealth or food supply could maintain it. The unfortunate aspect of the situation is that those strains best qualified to perpetuate themselves, such as college graduates and native American stock, are classes which contribute most to the declining rate. As a striking example of the present rate of declination of births, he calculates, using the ratio of children to women of child-bearing age, that, should conditions remain precisely the same, in a century and a half there would be no children born. He does not presume, of course, that conditions will remain the same, but makes the statement as an argument for proper consideration of a significant trend of civilization.

Correspondence.

HOSPITAL AND GENERAL PRACTITIONER.

Mr. Editor:—

One has heard of late statements *ad nauseam* as to the desirability of group-clinics, as to the preëminence of modern hospital methods, and the utter futuity of the practitioner. Not unnaturally the practitioner has "come back" in rebuttal. But the statements in rebuttal have been protests as to the method of presentation; and as to that only. It is not really important whether photographs of the disputant's family life accompany the article or not; the question is, at the long end of it all, whether he is right or wrong.

My quarrel is with the alleged facts that have been so gayly assumed as premises. It has been asserted (and loudly) that hospitals do work far better than the general practitioner can do. Case for case in the whole community, this may be true. I doubt it a bit, but hope I am wrong, as I try to be proud of my own hospital service. But if this is true, why is it true? Is it because of laboratory facilities, as we are so often told by a man who only recently characterized all urine analyses as useless or needless? Probably not.

Probably if it is true that the hospitals (the public ones) do better work, it is because they make a sincere and rather successful effort to pick the best men in the community for their staff positions. These men work along, year after year, recognizing that the house officer in training is not half so good an assistant as his hospital predecessor (now the surgeon's private assistant); recognizing that Dr. X could, and would, take far better bismuth plates in his own x-ray plant, and that the plates would be filed—not lost; recognizing that nurses in training are not so good as they will be after they are trained; knowing that the externe etherizes in a way that would not "get by" outside, but realizing that these folk must learn, while the "Visiting" does the best he can under the handicap.

They do this work partly because of tradition and a vague sense of public duty; partly because of the constant intimate contact with their peers, which so much makes for sanity and balance; partly because the vast experience gained in what we may call the loose wholesale business of a hospital is a great help toward a perspective, hardly to be gained by the more careful and detailed work of a private practice, which must, in the nature of things, be relatively small in these years in which a man's maximum hospital work is done.

After this period, he goes on as with any other fixed habit. If the hospitals turn out better work it is because they have the best men; not because the hospital system is ideal.

Just now a nation-wide investigation of hospitals (with standardization in view) is imminent. This is *not* because the country's hospitals are too good! In this community we have had a chance for a few years to rate efficiency with regard to the treatment of

accidents. Do the big hospitals show up in the lead? I trow not; very much not!

Best of all are the "company hospitals" of the big industrial plants. Worst of all is the untrained practitioner; poorly equipped because of poor pay. So far as I can get the facts, most of the reasonably successful practitioners show up about level with the good hospitals in results.

Let us not forget that the "G. P." has an x-ray man who does better work in the office afternoons than at the hospital of a morning; that he can always get *interested* advice from a medical or surgical colleague, or a nerve sharp, or a skin specialist, or what not, *at any time, even for the patient who cannot pay a cent*, and that this colleague will do better work on a case so referred than he does (however good his intentions) on a routine case pushed into the routine of his clinic.

One cannot quite organize any professional service; least of all that service of medicine which has from time immemorial been personal, altruistic and interested.

The doctor must be paid; he spends like another; wants as much money, but after all you cannot quite buy a doctor! His best work is where his heart is, and pay has little to do with it.

I am afraid that as time goes on, there is danger that medical care of the citizen is going to become a function of the State, but there is some comfort in the fact that we of this generation are not likely to live to see this development interfere seriously with our own work in the profession we have grown up in.

One other point, and I am done.

In this social or sociological scheming for the uprooting of medical practice, much has been made of the successful experiments of certain universities in the care of their students. Does it not occur instantly to any thinking man, that what can be done—has been done—at certain Western universities, namely, care at $5.00 (or whatever it may tot up) for the year, is absolutely valueless in arguing as to the medical care of a mixed community? Not only are the students at the age of maximum vigor, maximum interest in active affairs, minimum morbidity, but they are a picked class as well; the very best of our population. More than this, they are exempt from want, exempt from the strain and risk of industry, and exempt (or nearly so) from the great load of alcoholism and social vice. What can one argue from such a community as to what can be done in one of our big cities?

If we are to plan for the "socialization" of our profession, is it not time for us to look to men who can think in broad terms; who are fit to be leaders in a broad consideration—not of theories but of conditions, as they are; who can plan for the future, not for Utopia?

Changes in medical practice are sure to come; probably rather rapidly. Should we not plan to meet them by consideration of facts, as they are, not as they might be?

Very truly yours,
FREDERIC J. COTTON, M.D.

Boston, August 9, 1916.

P. S.: By the way, there may be some of your readers who mistake all this recent stuff for original thinking.

They should be disillusioned and referred to the long prologue of "The Doctor's Dilemma" by a wonderfully whimsical, clever, witty and mainly wise Irishman, named Shaw, who writes wonderful English to express rare sense and rarer nonsense. Perhaps he is right; perhaps (as I think "mine own self") half right; but Bernard Shaw did the only real thinking involved in this medico-sociological problem.

This relation of thought to headlines seems not unusual.

F. J. C.

BETTER DOCTORING FOR LESS MONEY.

BOSTON, MASS., Aug. 14, 1916.

Mr. Editor: I have been interested in the discussion in your columns of "Better Doctoring for Less Money," and have, therefore, read with care that contribution. I am reminded of the homely saying of one of our native philosophers: "It's better not to know so much than it is to know so many things that ain't so."

It must be a matter of regret that the writer of the article in question chose to express his opinion in such an infelicitous manner. Here and there is a suggestion of irony, to be sure, as in "the state of things which I have described—I believe without exaggeration." But whether it be satire or something else, it is to be taken seriously and it is a fair question to ask what the author is trying to say.

It is unfortunate that attention has been so diverted by the misrepresentation on the part of the author, perhaps *gaucherie* is a more accurate term, that his main point, as I see it, seems to have been missed by some of the critics.

The writer believes, as I understand him, that coöperation among physicians, by the group system, in connection with hospitals, will solve the problem of bringing to all who are sick the best medical art of today at a cost which any can pay. Stated thus concisely, it is easy to see that not all can have the best, and the problem is not the same in rural as in the urban communities.

There *is* some such problem before the medical profession today. Its solution is not yet clear. Perhaps the group system, in reality widely spread at present, may be of some assistance if it is more formally and extensively applied, and linked with hospitals. That this alone will suffice is questionable.

Now many other problems are touched upon in the original article and in the rejoinders. It would take too much of your time for me to specify all the errors, inaccuracies and misrepresentations. Scarcely a paragraph is above criticism. The comparison of students, picked young men and women, with the clientele of a general practitioner is illuminating. I am inclined to think that at a university clinic there would be little material for the departments of obstetrics, gynecology, pediatrics and genito-urinary diseases, for example, which constitute an important part of the interests of the man in general practice. Then, too, the diseases of the "degenerative" type, common after fifty, one would hardly expect to see. Is it true, I wonder, that at the University of California suspected early disease is real, at Harvard imaginary?

In the closing section, on the financial temptations of doctors in private practice, the author has demeaned himself unworthily. His arraignment of the medical profession is unjust. Is it not more nearly true to say that it is one of the glories of the medical profession that physicians spend their lives in preventing disease and curing the sick, trying to accomplish that which, if successful, would take away their livelihood?

But my object in writing is to call attention to the fact that we seem to be forgetting ourselves. Why this acrimony of discussion? The specialist is not a recent development. Before the times of the Father of Medicine, there were specialists among the Egyptians, and probably there will be specialists for some time to come. I am inclined to think the general practitioner will fortunately always be with us, not however, because he is poor. It will be a sorry day when society is so organized that there is no longer a place for such a man as the Doctor of the Old School.

We sometimes think of the specialist as one who charges special, that is high prices, not one who, having special knowledge and skill, renders special service in the art of medicine. It is the specialist on whom chiefly falls the burden of advancing knowledge

in both the art and the science of medicine, and his is the corresponding joy. This duty of the specialist is too often forgotten.

There are faults on the part of some specialists and on the part of some general practitioners. Whether the *faults* will be affected by the new era I do not know. Some physicians in general practice are ignorant, unscrupulous, dishonest, criminal. Well, so are some specialists. So are some lawyers. Some men and some women are unfaithful to their marriage vows. Shall therefore the marriage vows be relegated to the limbo of outgrown and harmful superstitions?

The problems arising from the growth of specialism, the progress in medical knowledge, the concentration of population in large urban communities, and the tendency toward socialization of many activities within the state, are problems which concern all of us, which we must all face and to solve which we must all do our part.

Efficiency is the cry of today. It is not new. "Whatsoever thy hand findeth to do, do it with thy might, for there is no work nor device nor knowledge nor wisdom in the grave where thou goest." But efficiency in itself is not what we want. A machine that makes an automobile a minute may be efficient in one sense of the word, but if it is telescopes that are wanted, "it cumbereth the ground." So the general practitioner is relatively inefficient in making very exact physical diagnoses, dispensing drugs, keeping elaborate records, compiling statistics, even in performing delicate and difficult operations, of which there are really some in modern surgery. But we find him very efficient in ministering to some of the needs of his people, for these often love their family doctor and look upon him as their friend. I wonder at times if a reason why some of the members of the medical profession are not looked up to as were our grandfathers, is not because we have not as much real manhood as they possessed. We know more about leucocytes and phagocytes, toxins and antitoxins, Widals and Wassermanns, but are ignorant of the weightier matters of the law which made them towers of strength in their communities.

I do not mean even to suggest the solution of the many problems confronting the medical profession today. The solution is not easy. I am quite sure, however, that it is not true, as the writer of a Question of Medical Ethics says, "if we *worked* in harmony more and *talked* harmony less, advance in medical progress would be assured and unobstructed." For lack of harmony is not the only obstruction to advance in medical progress. But it is true that when "we put aside petty jealousies and work together for the common good," we have made a beginning in the right spirit, the spirit which does actuate most of the men in the profession. And medicine is a profession; it is not an industry or a trade. But to this right spirit must be added intelligence, honesty, love of justice, forbearance, and loyalty to high ideals, which means determination to make them real.

Yours very truly,
STEPHEN RUSHMORE, M.D.

THE FUTURE OF BLINDED SOLDIERS.

(From Our Special Foreign Correspondent.)

LONDON, JULY 16, 1916.

ST. DUNSTAN'S HOSTEL FOR BLINDED SOLDIERS AND SAILORS.

Mr. Editor: A great work is being carried on by the National Institute for the Blind. Sir Arthur Pearson, President and Honorary Treasurer of the Society, is himself blind, and has organized a "house of good comfort" for blinded sailors and soldiers. A house and extensive grounds in Regent's Park were turned over to the institute through the generosity of Mr. Otto Kahn, an American, and in March, 1915, these premises became St. Dunstan's Institute for the Blinded Soldiers and Sailors.

At the end of the first year, in March, 1916, there were at the hostel, or in the annexes at the seashore, 140 non-commissioned officers and men. St. Dunstan's is a "workshop of darkness," differing from other institutes for the blind in that those who enter were, not many months before, strong men, possessed of their full powers.

As I approached Regent's Park I met two blind men. They had come to a crossing on a busy street and hesitated. A passerby stepped up and piloted them across and the two passed on down the sidewalk as though much at home. I entered the park and turned up the driveway to St. Dunstan's. There seemed to be no able-bodied men about, but one grows used to that in these times. Even the lodge-keeper was one-armed. The hostel was apparently filled with young ladies in Red Cross uniforms or dressed in simple white. None of the blinded was in sight, but as I walked out to the gardens one entered whistling cheerily. He passed through the room, following the strip of carpet laid as a pathway through the building. A young lady acted as my guide, and we proceeded to the workshops scattered about on the lawn, which sloped gently down to Regents' Park Lake. We entered a hut where a dozen or more men were being taught to read and write Braille, which, I believe, they pick up in a surprisingly short time. The alphabet is the same as that used in America, but the abbreviations are quite different. They write with machines resembling small, two-faced typewriters, which punch out the letters on strips of stiff paper. The teachers are women who come in each morning for this voluntary work. A small class was learning typewriting, and I was told that a number had secured good positions as stenographers.

At the sound of my guide's voice several of the men cried out, "Oh, Miss ————, will you save me a dance tonight?" It seems that, in addition to other entertainments, dances are held once or twice a week, and all the men are instructed in the terpsichorean art.

We passed an open window and stopped to look in on a group of men gathered about a table. One was reciting an accurate description of the surfaces and borders of the clavicle, while the others followed by fingering specimens of the bone. This was an anatomy class for those who wished to become masseurs. The blind have had considerable success with massage. One of the men from St. Dunstan's recently took the first place in the examinations given by the Incorporated Society of Trained Masseurs, against 180 competitors. Others are doing massage now in military and civilian hospitals. We entered the workshops. Here was a perfect babel of noise. Singing and whistling were punctuated by the rapping of many hammers. One section was making shoes, and very good work they did. Another was carpentering, and their instructor, also blind, passed busily from bench to bench. The joints they made were excellent. Some worked at mats, others wove baskets or nets. I was told that a number had learned telephony, and were now doing the work of centrals in a satisfactory manner. Others had gone out as trained gardeners.

The institute publishes music for the blind, and also a weekly edition of the *Daily Mail*, thanks to the generosity of Lord Northcliffe. The men seemed surprisingly busy and happy. In fact, one might travel a long way before finding an institute of any nature which is pervaded with such a cheering atmosphere. Not the whole day is spent in work, for each afternoon they take a few hours' relaxation, and many spend their time boating or even canoeing.

Sincerely yours,
W. G. P.

LIGHTER FORMS OF POLIOMYELITIS.

Mr. Editor:—

Several cases that have come under my observation during the past two or three weeks lead me to the inference that some of the men in a position of more or less official authority in this State in connection with the present epidemic of poliomyelitis are not conversant with the lighter forms of this disease. If we may reason from analogy with other infectious diseases, it would seem as important to recognize and isolate the light forms of poliomyelitis as it is to subject the more pronounced cases to a strict quarantine. The failure to do so offers a menace to the community really greater than the unrestricted freedom of a well pronounced instance of the disease, for in the latter instance a brief period of relative isolation is naturally enforced by the victim's more or less helpless condition.

The fact that seems not recognized by those responsible for the enforcement of quarantine is that absolute paralysis of muscles or muscle groups is not necessary for the diagnosis of anterior poliomyelitis. Many years of observation, previous to the present epidemic, at a large clinic in this city where many cases of this disease are seen every year, has demonstrated the fact that instances occur in which after an onset of typical character, with vomiting, fever, constipation and malaise, the child is left without absolute paralysis of any muscle or muscle-group, but with relative weakness of some muscle or group of muscles, and with loss of the deep tendon reflexes corresponding to or in the vicinity of the paretic muscles.

These cases must be considered as instances of anterior poliomyelitis. No other diagnosis is justified, and, so far as we know, the victim of such a symptom-complex is just as much a menace to the community as the victim with complete paralysis of an extremity. The extent and severity of the disease in any one individual is probably a matter largely of relative individual immunity. If we admit at all the contagiousness of this disease, we must recognize that, as in the case of diphtheria, a light instance in one child may transmit to some other child a more malignant type of the disease.

Physicians in responsible positions in hospitals or in health departments may be pardoned in failing to recognize abortive forms of this affection without sequelae, but it does not seem so excusable to ignore, during an epidemic, cases with suspicious onset followed by the residual of relative muscular weakness and abolition of the deep tendon reflexes, especially when this is conspicuous in one limb when compared with perfectly normal conditions in the opposite extremity.

Another variety of this disease that does not appear to be readily recognized is that which takes the form of acute encephalitis without nuclear involvement, either bulbar or spinal. I had thought that the long disputed claims of Strumpell had for some years been recognized as valid, but I was surprised to find recently that reluctance existed in a certain Boston hospital to accepting the identity of the two forms of infection, nuclear and cerebral. Not only do we have cases, during epidemics of anterior poliomyelitis, with purely cerebral symptoms, but such instances may on autopsy present no macroscopic explanation of the cause of the symptoms or the reason for the fatal termination, these being revealed only by careful and extended microscopic examination. These are instances in which the process is of focal character, and more or less limited in extent. They may not be accompanied by any localizing symptoms during life, but they are often characterized by hemiplegia or monoplegia, of course of the spastic type. They are frequently of very acute onset with a sharp rise of temperature, which, however, does not subsequently present any particular curve, and often soon falls to or near the normal level. In children, the convulsions that sometimes accompany the affection are frequently attributed to errors in diet or to some such irrelevant cause.

Under present circumstances I feel that attention should be called to the above facts, and I trust you will lend your columns to their publication.

Very sincerely yours,
ARTHUR W. FAIRBANKS, M.D.
591 Beacon Street, Boston, September 6, 1916.

A CASE OF POLIOMYELITIS.

Mr. Editor:—

The following brief account of a case of acute anterior poliomyelitis may be of interest on account of the age of the patient.

A man, sixty years and eleven months of age, awoke Thursday morning, Aug. 17, at about five o'clock, feeling sick. He ate little breakfast, but went to his work as a carpenter. He had such severe pain in his shoulder blades, shoulders and extending down the outer side of his upper arms and he had to leave work and go home at eleven o'clock. He was very restless during the afternoon, and sent for me in the early evening. The pain, which he described as "horrible," was not affected by movements of his arms, which he could make freely in all directions. There was a slight retraction of the head as he lay in bed, and some resistance to flexion of the neck, although he could rotate the head without difficulty. He was extremely restless, continually getting in and out of bed, and occasionally walking to the bathroom. The temperature was 101°; pulse, 90.

My suspicion was aroused by the severity of the pain, the indefiniteness of its location, and the fact that it was not affected by movements; by the slight rigidity of the neck, and the rise of temperature. During the next day he was much as he had been on the day before, although he was in somewhat less pain, and the stiffness of his neck was rather more marked; he was still very restless. The temperature continued about 100°. In the late afternoon he could not raise his left arm quite so readily as the right.

Saturday morning both arms were paralyzed, although he could move his fingers a very little; his breathing was entirely abdominal, and he choked when he tried to swallow. He died at 7 P.M., about two and a half days after the onset of the disease, from paralysis of the muscles of respiration. He was conscious until his death, which occurred suddenly as he was being helped from a chair to the bed.

The autopsy, on Sunday, showed no gross appearances of disturbance of the cord, but microscopic sections, made by Dr. Mallory, showed typical signs of poliomyelitis.

The points of special interest to me were the age of the patient and the fact, known to pathologists but not, I believe, to the average practitioner, that the cord lesions may not be apparent except on microscopic examination.

M. V. PIERCE, M.D.
Milton, Mass., Aug. 26, 1916.

BELGIAN PHYSICIANS' RELIEF FUND.

REPORT OF THE TREASURER OF THE COMMITTEE OF AMERICAN PHYSICIANS FOR THE AID OF THE BELGIAN PROFESSION, FOR THE MONTH OF AUGUST, 1916.

No contributions for the month of August.

Previously reported receipts		$7,946.86
Previously reported disbursements:—		
1,625 std. boxes food @	$2.20	$3,575.00
1,274 std. boxes food @	2.30	2,930.20
353 std. boxes food @	2.28	804.84
Total disbursements		$7,310.04
Balance		$ 636.82

F. F. SIMPSON, M.D., *Treasurer*.
7048 Jenkins Arcade Bldg., Pittsburgh, Pa.